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*Wesley M. Jacobsen,
Yukinori Takubo (Eds.)*

HANDBOOK OF JAPANESE SEMANTICS AND PRAGMATICS

 **NINJAL**
National Institute for Japanese Language and Linguistics

HANDBOOKS OF JAPANESE
LANGUAGE AND LINGUISTICS

DE
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Handbook of Japanese Semantics and Pragmatics

Handbooks of Japanese Language and Linguistics

Edited by
Masayoshi Shibatani
Taro Kageyama

Volume 5

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ISBN 978-1-61451-288-2
e-ISBN (PDF) 978-1-61451-207-3
e-ISBN (EPUB) 978-1-5015-0105-0
ISSN 2199-2851

Library of Congress Control Number: 2020934044

Bibliographic information published by the Deutsche Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie;
detailed bibliographic data are available on the Internet at <http://dnb.dnb.de>.

© 2020 Walter de Gruyter Inc., Boston/Berlin
Typesetting: Dörlemann Satz, Lemförde
Printing and binding: CPI books GmbH, Leck

www.degruyter.com

Preface

The project of compiling a series of comprehensive handbooks covering major fields of Japanese linguistics started in 2011, when Masayoshi Shibatani received a commission to edit such volumes as series editor from De Gruyter Mouton. As the planning progressed, with the volume titles selected and the volume editors assigned, the enormity of the task demanded the addition of a series co-editor. Taro Kageyama, Director-General of the National Institute for Japanese Language and Linguistics, was invited to join the project as a series co-editor. His participation in the project opened the way to make it a joint venture between NINJAL and De Gruyter Mouton. We are pleased to present the *Handbooks of Japanese Language and Linguistics (HJLL)* as the first materialization of the agreement of academic cooperation concluded between NINJAL and De Gruyter Mouton.

The HJLL Series is composed of twelve volumes, primarily focusing on Japanese but including volumes on the Ryukyuan and Ainu languages, which are also spoken in Japan, as well as some chapters on Japanese Sign Language in the applied linguistics volume.

- *Handbook of Japanese Historical Linguistics*
- *Handbook of Japanese Phonetics and Phonology*
- *Handbook of Japanese Lexicon and Word Formation*
- *Handbook of Japanese Syntax*
- *Handbook of Japanese Semantics and Pragmatics*
- *Handbook of Japanese Contrastive Linguistics*
- *Handbook of Japanese Dialects*
- *Handbook of Japanese Sociolinguistics*
- *Handbook of Japanese Psycholinguistics*
- *Handbook of Japanese Applied Linguistics*
- *Handbook of the Ryukyuan Languages*
- *Handbook of the Ainu Language*

Surpassing all currently available reference works on Japanese in both scope and depth, the *HJLL* series provides a comprehensive survey of nearly the entire field of Japanese linguistics. Each volume includes a balanced selection of articles contributed by established linguists from Japan as well as from outside Japan and is critically edited by volume editors who are leading researchers in their individual fields. Each article reviews milestone achievements in the field, provides an overview of the state of the art, and points to future directions of research. The twelve titles are thus expected individually and collectively to contribute not only to the enhancement of studies on Japanese on the global level but also to the opening up of new perspectives for general linguistic research from both empirical and theoretical standpoints.

The *HJLL* project has been made possible by the active and substantial participation of numerous people including the volume editors and authors of individual chapters. We would like to acknowledge with gratitude the generous support, both financial and logistic, given to this project by NINJAL. We are also grateful to John Haig (retired professor of Japanese linguistics, the University of Hawai'i at Mānoa) for serving as copy-editor for the series. In the future, more publications are expected to ensue from the NINJAL-Mouton academic cooperation.

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Taro Kageyama, Professor Emeritus, National Institute for Japanese Language and Linguistics (NINJAL)

Masayoshi Shibatani and Taro Kageyama

Introduction to the *Handbooks of Japanese Language and Linguistics*

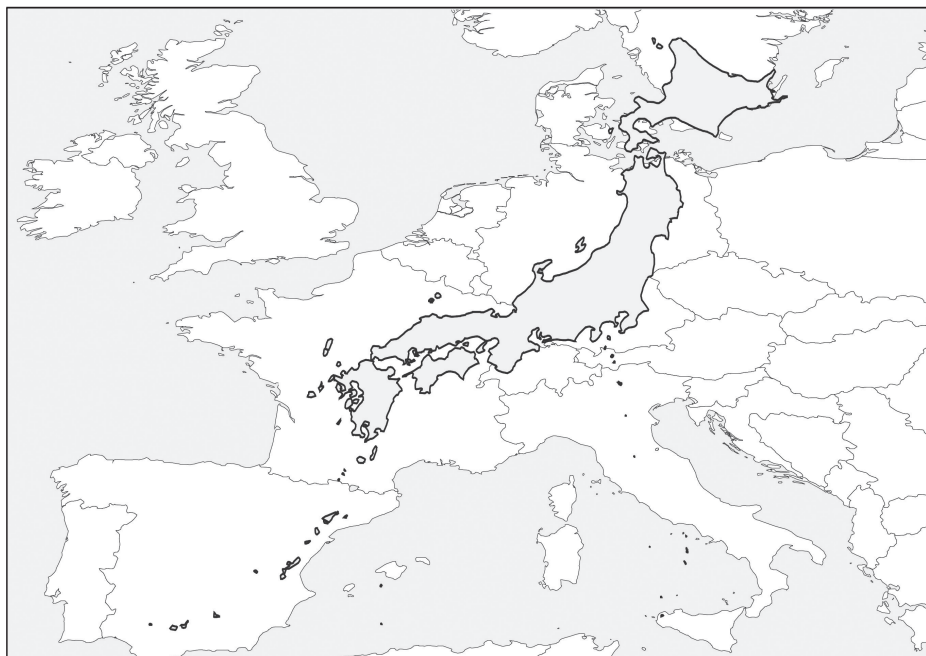
Comprising twelve substantial volumes, the *Handbooks of Japanese Language and Linguistics* (HJLL) series provides a comprehensive survey of practically all the major research areas of Japanese linguistics on an unprecedented scale, together with surveys of the endangered languages spoken in Japan, Ryukyuan and Ainu. What follows are introductions to the individual handbooks, to the general conventions adopted in this series, and an overview of the minimum essentials of contemporary Standard Japanese. Fuller descriptions of the languages of Japan, Japanese grammar, and the history of the Japanese language are available in such general references as Martin (1975), Shibatani (1990), and Frellesvig (2010).

1 Geography, Population, and Languages of Japan

Japan is situated in the most populous region of the world – Asia, where roughly one half of the world population of seven billion speak a variety of languages, many of which rank in the top tier among languages of the world in terms of number of native speakers. Japanese is spoken by more than 128 million people (as of 2013), who live mostly in Japan but also in Japanese emigrant communities around the world, most notably Hawaii, Brazil, and Peru. In terms of the number of native speakers, Japanese ranks ninth among the world's languages. Due partly to its rich and long literary history, Japanese is one of the most intensely studied languages in the world and has received scrutiny both within the domestic grammatical tradition and in traditions outside Japan such as the Chinese philological tradition, European structural linguistics, and the tradition of generative grammar originating in America. The *Handbooks of Japanese Language and Linguistics* intend to capture the achievements garnered over the years through analyses of a wide variety of phenomena in a variety of theoretical frameworks.

As seen in Map 1, where Japan is shown graphically superimposed on Continental Europe, the Japanese archipelago has a vast latitudinal extension of approximately 3,000 kilometers ranging from the northernmost island, roughly corresponding in latitude to Stockholm, Sweden, to the southernmost island, roughly corresponding in latitude to Sevilla, Spain.

Contrary to popular assumption, Japanese is not the only language native to Japan. The northernmost and southernmost areas of the Japanese archipelago are inhabited by people whose native languages are arguably distinct from Japanese. The southernmost sea area of Okinawa Prefecture is dotted with numerous small islands



Map 1: *Japan as overlaid on Europe*

Source: Shinji Sanada. 2007. *Hōgen wa kimochi o tsutaeru* [*Dialects convey your heart*].

Tokyo: Iwanami. p. 68

where Ryukyuan languages are spoken. Until recent years, Japanese scholars tended to treat Ryukyuan language groups as dialects of Japanese based on fairly transparent correspondences in sounds and grammatical categories between those language groups and mainland Japanese, although the two are mutually unintelligible. Another reason that Ryukyuan languages have been treated as Japanese dialects is that the Ryukyuan islands and Japan form a single nation. In terms of nationhood, however, Ryukyu was an independent kingdom until the beginning of the seventeenth century, when it was forcibly annexed to the feudal domain of Satsuma in southern Kyushu.

A more recent trend is to treat Ryukyuan as forming a branch of its own with the status of a sister language to Japanese, following earlier proposals by Chamberlain (1895) and Miller (1971). Many scholars specializing in Ryukyuan today even confer language status to different language groups within Ryukyuan, such as the Amami language, Okinawan language, Miyako language, etc., which are grammatically distinct to the extent of making them mutually unintelligible. The prevailing view now has Japanese and Ryukyuan forming the Japonic family as daughter languages of Proto-Japonic. HJLL follows this recent trend of recognizing Ryukyuan as a sister language to Japanese and devotes one full volume to it. The ***Handbook of the Ryukyuan Languages*** provides the most up-to-date information pertaining to Ryukyuan lan-

guage structures and use, and the ways in which these languages relate to Ryukyuan society and history. Like all the other handbooks in the series, each chapter delineates the boundaries and research history of the field it addresses, presents the most important and representative information on the state of research in that field, and spells out future research desiderata. This volume also includes a comprehensive bibliography of Ryukyuan linguistics.

The situation with Ainu, another language indigenous to Japan, is much less clear in terms of its genealogical relationship to Japanese. Various suggestions have been made relating Ainu to Paleo-Asiatic, Ural-Altaic, and Malayo-Polynesian or to such individual languages as Gilyak and Eskimo, besides the obvious candidate of Japanese as a sister language. The general consensus, however, points to the view that Ainu is related to Japanese only indirectly, if at all, via the Altaic family with its Japanese-Korean sub-branch (see Miller 1971; Shibatani 1990: 5-7 for an overview). Because Ainu has had northern Japan as its homeland and because HJLL is also concerned with various aspects of Japanese linguistics scholarship in general, we have decided to include a volume devoted to Ainu in this series. The *Handbook of the Ainu Language* outlines the history and current state of the Ainu language, offers a comprehensive survey of Ainu linguistics, describes major Ainu dialects in Hokkaido and Sakhalin, and devotes a full section to studies dealing with typological characteristics of the Ainu language such as polysynthesis and incorporation, person marking, plural verb forms, and aspect and evidentials.

2 History

Japan's rich and long literary history dates back to the early seventh century, when the Japanese learned to use Chinese characters in writing Japanese. Because of the availability of abundant philological materials, the history of the Japanese language has been one of the most intensely pursued fields in Japanese linguistics. While several different divisions of Japanese language history have been proposed, Frellesvig (2010) proposes the following four linguistic periods, each embracing the main political epochs in Japanese history.

- | | | |
|--------------------------|-----------|---|
| 1. Old Japanese | 700–800 | (Nara period, 712–794) |
| 2. Early Middle Japanese | 800–1200 | (Heian period, 794–1185) |
| 3. Late Middle Japanese | 1200–1600 | (Kamakura period, 1185–1333;
Muromachi period, 1333–1573) |
| 4. Modern Japanese | 1600– | (Edo, 1603–1868; Meiji, 1868–1912;
Taishō, 1912–1926; Shōwa, 1926–1989;
Heisei, 1989–2019; Reiwa 2019–) |

This division reflects a major boundary between Pre-modern and Modern Japanese brought about by some radical changes in linguistic structure during the Late Middle Japanese period. Modern Japanese is often further subdivided into Early Modern (Edo, 1603–1868), Modern (Meiji, 1868–1912; Taishō, 1912–1926), and Present-day Japanese (Shōwa, 1926–1989; Heisei, 1989–2019; Reiwa 2019–).

The *Handbook of Japanese Historical Linguistics* will present the latest research on better studied topics, such as segmental phonology, accent, morphology, and certain salient syntactic phenomena such as focus constructions. It will also introduce areas of study that have traditionally been underrepresented, ranging from syntax and Sino-Japanese (*kanbun*) materials to historical pragmatics, and demonstrate how these contribute to a fuller understanding of the overall history of Japanese, as well as outlining larger-scale tendencies and directions of change that have taken place within the language over its attested history. Major issues in the reconstruction of prehistoric Japanese and in the individual historical periods from Old Japanese to Modern Japanese are discussed, including writing and the materials available for historical study, influences of Sino-Japanese on Japanese, the histories of different vocabulary strata, the history of honorifics and polite language, generative diachronic syntax, and the development of case marking.

3 Geographic and social variations

Because of the wide geographical spread of the Japanese archipelago from north to south, characterized by high mountain ranges, deep valleys, and wide rivers as well as numerous islands, Japanese has developed a multitude of dialects, many of which differ from each other in a way more or less like current descendants of the Romance language family. Like historical studies, the research tradition of dialect studies has a unique place in Japanese linguistics and has attracted a large number of students and amateur collectors of dialect forms as well as professional linguists. The *Handbook of Japanese Dialects* surveys the historical backdrop to theoretical frameworks of contemporary studies in Japanese geolinguistics and includes analyses of prominent research topics in cross-dialectal perspective, such as accentual systems, honorifics, verbs of giving, and nominalizations. The volume also devotes major attention to sketching the grammars of dialects from the northern island of Hokkaido to the southern island of Kyushu, allowing a panoramic view of differences and similarities among representative dialects throughout Japan.

Besides having a physical setting that has fostered geographic variation, the society of Japan has exhibited differing types of social structure over the years, starting from the time of the nobility and court life of the Old and Early Middle Japanese periods, through the caste structure of the feudalistic Late Middle and Early Modern Japanese periods, to the modern democratic society of the Modern and Present-day

Japanese periods. These different social structures have spawned a variety of social dialects, including power- and gender-based varieties of Japanese. The ***Handbook of Japanese Sociolinguistics*** examines a wide array of sociolinguistic topics ranging from the history of Japanese sociolinguistics, including foreign influences and internal innovations, to the central topics of variation due to social stratification, gender differences, and discourse genre. Specific topics include honorifics and women's speech, critical discourse analysis, the pragmatics of political discourse, contact-induced change, emerging new dialects, Japanese language varieties outside Japan, and language policy.

4 Lexicon and phonology

The literary history of Japan began with early contacts with China. Chinese apparently began to enrich the Japanese lexicon even in pre-historic periods, when such deeply assimilated words as *uma* 'horse' and *ume* 'plum' are believed to have entered the language. Starting in the middle of the sixth century, when Buddhism reached Japan, Chinese, at different periods and from different dialect regions, has continuously contributed to Japanese in an immeasurable way affecting all aspects of grammar, but most notably the lexicon and the phonological structure, which have sustained further and continuous influences from European languages from the late Edo period on. Through these foreign contacts, Japanese has developed a complex vocabulary system that is composed of four lexical strata, each with unique lexical, phonological, and grammatical properties: native Japanese, mimetic, Sino-Japanese, and foreign (especially English).

The ***Handbook of Japanese Lexicon and Word Formation*** presents a comprehensive survey of the Japanese lexicon, word formation processes, and other lexical characteristics seen in the four lexical strata of contemporary Japanese. The agglutinative character of the language, coupled with its intricate system of vocabulary strata, makes it possible for compounding, derivation, conversion, and inflection to be closely intertwined with syntactic structure, giving rise to theoretically intriguing interactions between word formation processes and syntax that are not easily found in inflectional, isolate, or polysynthetic types of languages. Theoretically oriented studies associated with these topics are complemented by ones oriented toward lexical semantics, which also bring to light theoretically challenging issues involving the morphology-syntax interface.

The four lexical strata characterizing the Japanese lexicon are also relevant to Japanese phonology, as each stratum has some characteristic sounds and sound combinations not seen in the other strata. The ***Handbook of Japanese Phonetics and Phonology*** describes and analyzes the basic phonetic and phonological structures of modern Japanese with a main focus on standard Tokyo Japanese, relegating the

topics of dialect phonetics and phonology to the *Handbook of Japanese Dialects*. It includes several chapters dealing with phonological processes unique to the Sino-Japanese and foreign strata as well as to the mimetic stratum. Other topics include word tone/accent, mora-timing, sequential voicing (*rendaku*), consonant geminates, vowel devoicing and diphthongs, and the appearance of new consonant phonemes. Also discussed are phonetic and phonological processes within and beyond the word such as rhythm, intonation, and the syntax-phonology interface, as well as issues bearing on other subfields of linguistics such as historical and corpus linguistics and research on the L2 acquisition of Japanese phonology.

5 Syntax and semantics

Chinese loans have also affected Japanese syntax, though it is unclear to what extent they have affected Japanese semantics beyond the level of lexical semantics. In particular, Chinese loans form two distinct lexical categories in Japanese – verbal nouns, forming a subcategory of the noun class, and adjectival nouns (*keiyō dōshi*), which are recognized by some as forming major independent lexical categories along with noun, verb, and adjective classes. The former denote verbal actions and, unlike regular nouns denoting objects and thing-like entities, can function as verbs by combining with the light verb *suru*, which is obviously related to the verb *suru* ‘do’. The nominal-verbal Janus character of verbal nouns results in two widely observed syntactic patterns that are virtually synonymous in meaning; e.g., *benkyō-suru* (studying-DO) ‘to study’ and *benkyō o suru* (studying ACC do) ‘do studying’. As described in the *Handbook of Japanese Lexicon and Word Formation*, the lexical category of adjectival noun has been a perennial problem in the analysis of Japanese parts of speech. Property-concept words that fall into this class, such as *kirei* ‘pretty’ and *kenkō* ‘health/healthy’, do not inflect by themselves, unlike native Japanese adjectives, and, like nouns, require the inflecting copula *da* to perform the predication function, hence the label of adjectival noun for this class. However, many of these cannot head noun phrases – the hallmark of the nominal class – and some even yield nouns via *-sa* nominalization, which is not possible with regular nouns.

The *Handbook of Japanese Lexicon and Word Formation* and the *Handbook of Japanese Syntax* make up twin volumes because many chapters in the former deal with syntactic phenomena, as the brief discussion above on the two Sino-Japanese lexical categories clearly indicates. The syntax handbook covers a vast landscape of Japanese syntax from three theoretical perspectives: (1) traditional Japanese grammar, known as *kokugogaku* (lit. national-language study), (2) the functional approach, and (3) the generative grammar framework. Broad issues analyzed include sentence types and their interactions with grammatical verbal categories, grammatical relations (topic, subject, etc.), transitivity, nominalizations, grammaticalization,

voice (passives and causatives), word order (subject, scrambling, numeral quantifiers, configurationality), case marking (*ga/no* conversion, morphology and syntax), modification (adjectives, relative clause), and structure and interpretation (modality, negation, prosody, ellipsis). These topics have been pursued vigorously over many years under different theoretical persuasions and have played important roles in the development of general linguistic theory. For example, the long and sustained study of the grammatical relations of subject and topic in Japanese has had a significant impact on the study of grammatical relations in European as well as Austronesian languages. In the study of word order, the analysis of Japanese numeral quantifiers has been used as one of the leading pieces of evidence for the existence of a movement rule in human language. With regard to case marking, the way subjects are case marked in Japanese has played a central role in the study of case marking in the Altaic language family. Recent studies of nominalizations have been central to the analysis of their modification and referential functions in a wide variety of languages from around the globe, with far-reaching implications for past studies of such phenomena as parts of speech, (numeral) classifiers, and relative clauses. And the study of how Japanese prosody plays a crucial role in interpretation has become the basis for some important recent developments in the study of wh-questions.

The *Handbook of Japanese Semantics and Pragmatics* presents a collection of studies on linguistic meaning in Japanese, either as conventionally encoded in linguistic form (the field of semantics) or as generated by the interaction of form with context (the field of pragmatics). The studies are organized around a model that has long currency in traditional Japanese grammar, whereby the linguistic clause consists of a multiply nested structure centered in a propositional core of objective meaning around which forms are deployed that express progressively more subjective meaning as one moves away from the core toward the periphery of the clause. Following this model, the topics treated in this volume range from aspects of meaning associated with the propositional core, including elements of meaning structured in lexical units (lexical semantics), all the way to aspects of meaning that are highly subjective, being most grounded in the context of the speaker. In between these two poles of the semantics-pragmatics continuum are elements of meaning that are defined at the level of propositions as a whole or between different propositions (propositional logic) and forms that situate propositions in time as events and those situating events in various modes of reality including non-actual worlds, e.g., those hoped for (desiderative meaning), denied (negation), hypothesized (conditional meaning), or viewed as ethically or epistemologically possible or necessary (epistemic and deontic modality). Located yet closer to the periphery of the Japanese clause are a rich array of devices for marking propositions according to the degree to which the speaker is committed to their veracity and for marking differing perceptual and cognitive modalities as well as for distinguishing information that is presupposed versus affirmed.

These studies in Japanese syntax and semantics are augmented by cross-linguistic studies that examine various topics in these fields from the perspectives of lan-

guage universals and the comparative study of Japanese and other languages. The *Handbook of Japanese Contrastive Linguistics* sets as its primary goal uncovering principled similarities and differences between Japanese and other languages around the globe and thereby shedding new light on the universal and language-particular properties of Japanese. Topics ranging from inalienable possession to numeral classifiers, from spatial deixis to motion typology, from nominalization to subordination, and other topics closely related to these are taken up within the framework of typological universals. Additionally, various aspects of Japanese such as resultative-progressive polysemy, entailment of event realization, internal-state predicates, topic constructions, and interrogative pronouns, are compared and contrasted with other specific languages, including Ainu, Koryak, Chinese, Korean, Newar, Thai, Burmese, Tagalog, Kapampangan, Lamaholot, Romanian, French, Spanish, German, English, Swahili, Sidaama, and Mayan languages.

6 Psycholinguistics and Applied Linguistics

HJLL includes two volumes containing topics related to a wider application of Japanese linguistics and to those endeavors seeking grammar-external evidence for the psycho-neurological reality of the structure and organization of grammar. Incorporating recent research on the study of the cognitive processes and brain mechanisms underlying language use, language acquisition, and language disorders, the *Handbook of Japanese Psycholinguistics* presents the current state of scholarly understanding of the mechanisms of language acquisition and language processing. In particular, the volume seeks answers to the question of how Japanese is learned/acquired as a first or second language, and pursues the question of how Japanese sentences are comprehended and produced. The chapters in the acquisition section allow readers to acquaint themselves with issues pertaining to the question of how grammatical features (including pragmatic and discourse features) are acquired and how the language domain of the brain develops, with respect to both language particular and universal features. Specific topics dealt with include Japanese children's perceptual development, the conceptual and grammatical development of nouns, Japanese Specific Language Impairment, narrative development in the L1 cognitive system, and L2 Japanese acquisition and its relation to L1 acquisition. The language processing section focuses on both L1 and L2 Japanese processing, covering topics such as the role of prosodic information in production/comprehension, the processing of complex grammatical structures such as relative clauses, processing issues related to variable word order, and lexical and sentence processing in L2 by speakers of different native languages.

The *Handbook of Japanese Applied Linguistics* complements the Psycholinguistics volume by examining language acquisition from broader sociocultural perspec-

tives, including language as a means of communication and as a social behavioral system, emphasizing pragmatic development as central to both L1 and L2 acquisition and to overall human development. Topics approached from these perspectives include the role of caregiver speech in early language development, literacy acquisition, and the acquisition of writing skills. Closely related to L1 and L2 acquisition and development are studies of bilingualism/multilingualism and the teaching and learning of foreign languages, including Japanese as a second language, where topics are discussed such as cross-lingual transfer from L1 to L2, learning errors, and proficiency assessment of second language acquisition. Chapters dealing with topics more squarely falling in the domain of applied linguistics cover issues in corpus/computational linguistics (including discussions of CHILDES for Japanese and the YK corpus, both widely used in research on Japanese as a second language), clinical linguistics (including discussions of language development in children with hearing impairment and other language disorders, Down syndrome, and autism), and translation and interpretation. Technically speaking, Japanese Sign Language is not a variety of Japanese, but in view of the importance of this language in Japanese society and because of the rapid progress in sign language research in Japan and abroad and for what it has to offer to the general theory of language, chapters dealing with Japanese Sign Language are also included in this volume.

7 Grammatical sketch of Standard Japanese

The following pages offer a brief overview of Japanese grammar as an aid to a quick grasp of the structure of Japanese that may prove useful in studying individual, thematically organized handbooks in this series. One of the difficult problems in describing non-European languages using familiar technical terms derived from the European grammatical tradition concerns mismatches between what the glosses may imply and what grammatical categories they are used to denote in the description. We will try to illustrate this problem below by way of a warning not to take all glosses at their face value. But first some remarks are in order about the conventions of transcription of Japanese, glossing of examples, and their translations used in this series.

7.1 Writing, Alphabetic Transcription, and Pronunciation

Customarily, Japanese is written by using a mixture of Chinese characters (for content words), *hiragana* (for function words such as particles, suffixes, and inflectional endings), *katakana* (for foreign loans and mimetics), and sometimes the Roman alphabet. Because Japanese had no indigenous writing system, it developed two phonogram systems for representing the phonological unit of “mora,” namely *hiragana*

and *katakana*, by simplifying or abbreviating (parts of) Chinese characters. *Hiragana* and *katakana* syllabaries are shown in Table 1, together with the alphabetic transcriptions adopted in the HJLL series.

Table 1: Alphabetic transcriptions adopted in HJLL

transcription	<i>a</i>	<i>ka</i>	<i>sa</i>	<i>ta</i>	<i>na</i>	<i>ha</i>	<i>ma</i>	<i>ya</i>	<i>ra</i>	<i>wa</i>	<i>n</i>
<i>hiragana</i>	あ	か	さ	た	な	は	ま	や	ら	わ	ん
<i>katakana</i>	ア	カ	サ	タ	ナ	ハ	マ	ヤ	ラ	ワ	ン
transcription	<i>i</i>	<i>ki</i>	<i>si</i>	<i>ti</i>	<i>ni</i>	<i>hi</i>	<i>mi</i>	–	<i>ri</i>	–	
<i>hiragana</i>	い	き	し	ち	に	ひ	み	–	り	–	
<i>katakana</i>	イ	キ	シ	チ	ニ	ヒ	ミ	–	リ	–	
transcription	<i>u</i>	<i>ku</i>	<i>su</i>	<i>tu</i>	<i>nu</i>	<i>hu</i>	<i>mu</i>	<i>yu</i>	<i>ru</i>	–	
<i>hiragana</i>	う	く	す	つ	ぬ	ふ	む	ゆ	る	–	
<i>katakana</i>	ウ	ク	ス	ツ	ヌ	フ	ム	ユ	ル	–	
transcription	<i>e</i>	<i>ke</i>	<i>se</i>	<i>te</i>	<i>ne</i>	<i>he</i>	<i>me</i>	–	<i>re</i>	–	
<i>hiragana</i>	え	け	せ	て	ね	へ	め	–	れ	–	
<i>katakana</i>	エ	ケ	セ	テ	ネ	ヘ	メ	–	レ	–	
transcription	<i>o</i>	<i>ko</i>	<i>so</i>	<i>to</i>	<i>no</i>	<i>ho</i>	<i>mo</i>	<i>yo</i>	<i>ro</i>	<i>o</i>	
<i>hiragana</i>	お	こ	そ	と	の	ほ	も	よ	ろ	を	
<i>katakana</i>	オ	コ	ソ	ト	ノ	ホ	モ	ヨ	ロ	ヲ	

Because of phonological change, the columns indicated by strikethroughs have no letters in contemporary Japanese, although they were filled in with special letters in classical Japanese. If all the strikethroughs were filled, the chart would contain 50 letters for each *hiragana* and *katakana*, so the syllabary chart is traditionally called *Gojū-on zu* (chart of 50 sounds). To these should be added the letter ん or ャ representing a moraic nasal [N], on the rightmost column.

The “50-sound chart,” however, does not exhaust the *hiragana* and *katakana* letters actually employed in Japanese, because the basic consonant sounds (*k*, *s*, *t*, *h*) have variants. The sound represented by the letter *h* is historically related to the sound represented by *p*, and these voiceless obstruents (*k*, *s*, *t*, and *p*) have their respective voiced counterparts (*g*, *z*, *d*, and *b*). Table 2 shows letters for these consonants followed by five vowels.

Table 2: Letters for voiced obstruents and bilabial [p]

transcription	<i>ga</i>	<i>za</i>	<i>da</i>	<i>ba</i>	<i>pa</i>
<i>hiragana</i>	が	ざ	だ	ば	ぱ
<i>katakana</i>	ガ	ザ	ダ	バ	パ
transcription	<i>gi</i>	<i>zi</i>	<i>di</i>	<i>bi</i>	<i>pi</i>
<i>hiragana</i>	ぎ	じ	ぢ	び	ぴ
<i>katakana</i>	ギ	ジ	ヂ	ビ	ピ
transcription	<i>gu</i>	<i>zu</i>	<i>du</i>	<i>bu</i>	<i>pu</i>
<i>hiragana</i>	ぐ	ず	づ	ぶ	ぷ
<i>katakana</i>	グ	ズ	ヅ	ブ	プ
transcription	<i>ge</i>	<i>ze</i>	<i>de</i>	<i>be</i>	<i>pe</i>
<i>hiragana</i>	げ	ぜ	で	べ	ぺ
<i>katakana</i>	ゲ	ゼ	デ	ベ	ペ
transcription	<i>go</i>	<i>zo</i>	<i>do</i>	<i>bo</i>	<i>po</i>
<i>hiragana</i>	ご	ぞ	ど	ぼ	ぽ
<i>katakana</i>	ゴ	ゾ	ド	ボ	ポ

It is important to note that Tables 1 and 2 show the conventional letters and alphabetical transcription adopted in the text of the HJLL series; they are not intended to represent the actual pronunciations of Japanese vowels and consonants. For example, among the vowels, the sound represented as “u” is pronounced as [u] with unrounded lips. Consonants may change articulation according to the vowels that follow. The following will require particular attention.

There are two Romanization systems widely used in Japan. One, known as the Hepburn system, is more widely used in public places throughout Japan such as train stations, street signs, as well as in some textbooks for learners of Japanese. This system is ostensibly easier for foreigners familiar with the English spelling system. Another, the *Kunreishiki* (the cabinet ordinance system), is phonemic in nature and is used by many professional linguists. The essential differences between the two Romanization systems center on palatalized and affricate consonants, as shown in Table 3 below with some representative syllables for which the two Romanization renditions differ:

Table 3: Two systems of Romanization

Hiragana	IPA	Hepburn	Kunreishiki
し	[ʃi]	shi	si
しゃ	[ʃa]	sha	sya
しゅ	[ʃɯ]	shu	syu
しょ	[ʃo]	sho	syo
じ and ぢ	[dʒi]	ji	zi
じゃ	[dʒa]	ja	zya
じゅ	[dʒɯ]	ju	zyu
じょ	[dʒo]	jo	zyo
ち	[tʃi]	chi	ti
ちゃ	[tʃa]	cha	tya
ちゅ	[tʃɯ]	chu	tyu
ちょ	[tʃo]	cho	tyo
つ	[tsw]	tsu	tu
づ and ず	[dzw]	zu	zu
ふ	[ɸɯ]	fu	hu

Except for the volumes on Ryukyuan, Ainu, and Japanese dialects, whose phonetics differ from Standard Japanese, HJLL adopts the Kunreishiki system for rendering cited Japanese words and sentences but uses the Hepburn system for rendering conventional forms such as proper nouns and technical linguistic terms in the text and in the translations of examples.

Japanese sentences cited in HJLL look as below, where the first line transliterates a Japanese sentence in Kunreishiki Romanization, the second line contains interlinear glosses largely following the Leipzig abbreviation convention, and the third line is a free translation of the example sentence.

- (1) *Taroo wa Ziroo to Tookyoo e it-te kutusita o kat-ta.*
 Taro TOP Jiro COM Tokyo ALL go-GER sock ACC buy-PST
 ‘Taro went to Tokyo with Jiro and bought socks.’

The orthographic convention for rendering Japanese is to represent a sentence with an uninterrupted sequence of Sino-Japanese characters and *katakana* or *hiragana* syllabaries without a space for word segmentation, as in 太郎は次郎と東京へ行って靴下を買った for (1). In line with the general rules of Romanization adopted in

books and articles dealing with Japanese, however, HJLL transliterates example sentences by separating word units by spaces. The example in (1) thus has 10 words. Moreover, as in *it-te* (go-GERUND) and *kat-ta* (buy-PAST) in (1), word-internal morphemes are separated by a hyphen whenever necessary, although this practice is not adopted consistently in all of the HJLL volumes. Special attention should be paid to particles like *wa* (topic), *to* ‘with’ and *e* ‘to, toward’, which, in the HJLL representation, are separated from the preceding noun or noun phrase by a space (see 7.3). Remember that case and other kinds of particles, though spaced, form phrasal units with their preceding nouns.

7.2. Word order

As seen in (1), Japanese is a verb-final, dependent-marking agglutinative language. It is basically an SOV language which marks nominal dependent arguments by particles (*wa*, *to*, *e*, and *o* above) and whose predicative component consists of a verbal stem with a variety of suffixes, auxiliary verbs, and semi-independent predicate extenders pertaining to the speech act of predication (see section 7.6). While a verb is rigidly fixed in sentence final position, the order of subject and object arguments may vary depending on pragmatic factors such as emphasis, background information, and cohesion. Thus, sentence (2a) with the unmarked order below, in principle may vary in multiple ways as shown by some possibilities in (2b)-(2d).

- (2) a. *Taroo ga Hanako ni Ziroo o syookai-si-ta.*
 Taro NOM Hanako DAT Jiro ACC introducing-do-PST
 ‘Taro introduced Jiro to Hanako.’
- b. *Taroo ga **Ziroo o** Hanako ni syookai-si-ta.*
- c. ***Hanako ni** Taroo ga Ziroo o syookai-si-ta.*
- d. ***Ziroo o** Taroo ga Hanako ni syookai-si-ta.*

Adverbs, likewise, can be rather freely placed, though each type of adverbs has its own basic position.

- (3) a. ***Saiwainimo** Hanako ga gohan o tai-te kure-te i-ta.*
 luckily Hanako NOM rice ACC cook-GER GIVE-GER BE-PST
 ‘Luckily Hanako had done the favor of cooking the rice (for us).’
- b. *Hanako ga **saiwainimo** gohan o tai-te kure-te i-ta.*
- c. *Hanako ga gohan o **saiwainimo** tai-te kure-te i-ta.*

Notice that while the verbal complex in the sentence above is not as tightly organized as a complex involving suffixes, a sentence adverb cannot be placed within the verbal complex, showing that the sequence of *tai-te kure-te i-ta* forms a tighter constituent which, however, permits insertion of the topic particle *wa* after each of the gerund-forms. (See section 7.4 below on the nature of gerund-forms in Japanese.)

As the normal position of sentence adverbs is sentence initial, manner and resultative adverbs have an iconically-motivated position, namely before and after the object noun phrase, respectively, as below, though again these adverbs may move around with varying degrees of naturalness:

- (4) *Hanako ga isoide gohan o tai-te kure-ta.*
 Hanako NOM hurriedly rice ACC cook-GER GIVE-PST
 ‘Hanako hurried did the favor of cooking the rice (for us).’
- (5) *Hanako ga gohan o yawarakaku tai-te kure-ta.*
 Hanako NOM rice ACC softly cook-GER GIVE-PST
 ‘Hanako did the favor of cooking the rice soft (for us).’

The fact that an object noun phrase can be easily separated from the verb, as in (2b.d), and that adverbs can freely intervene between an object and a verb, as in (5), has raised the question whether Japanese has a verb phrase consisting of a verb and an object noun phrase as a tightly integrated constituent parallel to the VP in English (cf. **cook hurriedly the rice* – the asterisk marks ungrammatical forms).

7.3 NP structure

Noun phrases, when they occur as arguments or adjuncts, are marked by case particles or postpositions that are placed after their host nouns. Because case markers can be set off by a pause, a filler, or even longer parenthetical material, it is clear that they are unlike declensional affixes in inflectional languages like German or Russian. Their exact status, however, is controversial; some researchers regard them as clitics and others as (non-independent) words.

Elaboration of Japanese noun phrases is done by pronominal modifiers such as demonstratives, genitive noun phrases, or adjectives, as below, indicating that Japanese is a consistent head-final language at both nominal and clausal levels.

- (6) a. *kono Taroo no kaban*
 this Taro GEN bag
 lit. ‘this Taro’s bag’

- b. *Taroo no kono kaban*
 Taro GEN this bag
 lit. 'Taro's this bag'

Japanese lacks determiners of the English type that "close off" NP expansion. The literal translations of the Japanese forms above are ungrammatical indicating that English determiners like demonstratives and genitive noun phrases do not allow further expansion of an NP structure. Also seen above is the possibility that prenominal modifiers can be reordered just like dependents at the sentence level. The order of prenominal modifiers, however, is regulated by the iconic principle of placing closer to the head noun those modifiers that have a greater contribution in specifying the nature and type of the referent. Thus, descriptive adjectives tend to be placed closer to a head noun than demonstratives and genitive modifiers of non-descriptive types. Interesting is the pattern of genitive modifiers, some of which are more descriptive and are placed closer to the head noun than others. Genitives of the same semantic type, on the other hand, can be freely reordered. Compare:

- (7) a. *Yamada-sensei no kuroi kaban*
 Yamada-professor GEN black bag
 'Professor Yamada's black bag'
- b. **kuroi Yamada-sensei no kaban*
 (O.K. with the reading of 'a bag of Professor Yamada who is black')
- (8) a. *Yamada-sensei no gengogaku no koogi*
 Yamada-professor GEN linguistics GEN lecture
 'Professor Yamada's linguistics lecture'
- b. **gengogaku no Yamada-sensei no koogi*
 (O.K. with the reading of 'a lecture by Professor Yamada of linguistics')
- (9) a. *Yamada-sensei no kinoo no koogi*
 Yamada-professor GEN yesterday GEN lecture
 lit. 'Professor Yamada's yesterday's lecture' 'Yesterday's lecture by Professor Yamada'
- b. *Kinoo no Yamada-sensei no koogi*
- (10) a. *oomori no sio-azi no raamen*
 big.serving GEN salt-tasting GEN ramen
 lit. 'big-serving salt-tasting ramen noodles'
- b. *sio-azi no oomori no raamen*

- (11) a. *atui sio-azi no raamen*
 hot salt-tasting GEN ramen
 ‘hot salt-tasting *ramen* noodles’
 b. *sio-azi no atui ramen*

Numeral classifiers (CLFs) pattern together with descriptive modifiers so that they tend to occur closer to a head noun than a possessive genitive phrase.

- (12) a. *Taroo no san-bon no enpitu*
 Taro GEN three-CLF GEN pencil
 ‘Taro’s three pencils’
 b. **san-bon no Taroo no enpitu*

Numeral classifiers also head an NP, where they play a referential function and where they can be modified by a genitive phrase or an appositive modifier, as in (13a, b). They may also “float” away from the head noun and become adverbial, as in (13c).

- (13) a. *Taroo wa gakusei no **san-nin** o mikake-ta.*
 Taro TOP student GEN three-CLF ACC see.by.chance-PST
 ‘Taro saw three of the students by chance.’
 b. *Taroo wa gakusei **san-nin** o mikake-ta.*
 Taro TOP student three-CLF ACC see.by.chance-PST
 lit. ‘Taro saw student-threes by chance.’
 c. *Taroo wa gakusei o **san-nin** mikake-ta.*
 Taro TOP student ACC three-CLF see.by.chance-PST
 ‘Taro saw students, three (of them), by chance.’

As in many other SOV languages, so-called relative clauses are also prenominal and are directly placed before their head nouns without the mediation of “relative pronouns” like English *which* or *who* or “complementizers” like *that*. Predicates in relative clauses are finite, taking a variety of tense and aspect. The subject may be replaced by a genitive modifier. Observe (14a).

- (14) a. *Boku mo [Taroo ga/no kat-ta] hon o kat-ta.*
 I ADVPART Taro NOM/GEN buy-PST book ACC buy-PST
 ‘I also bought the book which Taro bought.’
 b. *Boku mo [Taroo ga/no kat-ta] no o kat-ta.*
 I ADVPART Taro NOM/GEN buy-PST NM ACC buy-PST
 ‘I also bought the one which Taro bought.’

The structure used as a modifier in the relative clause construction can also head a noun phrase, where it has a referential function denoting an entity concept evoked by the structure. In Standard Japanese such a structure is marked by the nominalization particle *no*, as in (14b).

7.4 Subject and Topic

Some of the sentences above have noun phrases marked by the nominative case particle *ga* and some by the topic marker *wa* for what appear to correspond to subject noun phrases in the English translations. This possibility of *ga*- and *wa*-marking is seen below.

- (15) a. *Yuki ga siro-i.*
 snow NOM white-PRS
 ‘The snow is white.’
- b. *Yuki wa siro-i.*
 snow TOP white-PRS
 ‘Snow is white.’

As the difference in the English translations indicates, these two sentences are different in meaning. Describing the differences between topic and non-topic sentences has been a major challenge for Japanese grammarians and teachers of Japanese alike. The difference in the English translations above, however, is indicative of how these two sentences might differ in meaning. Sentence (15a) describes a state of affairs involving specific snow just witnessed, whereas (15b) is a generic statement about a property of snow unbounded by time. Thus, while (15a) would be uttered only when the witnessed snow is indeed white, (15b) would be construed true even though we know that there are snow piles that are quite dirty.

A similar difference is seen in verbal sentences as well.

- (16) a. *Tori ga tob-u.*
 bird NOM fly-NONPST
 ‘A bird is flying/is
 about to fly.’
- b. *Tori wa tob-u.*
 bird TOP fly-NONPST
 ‘Birds fly.’

Non-topic sentences like (15a) and (16a) are often uttered with an exclamation accompanying a sudden discovery of a state of affairs unfolding right in front of one’s eyes.

The nonpast tense forms (*-i* for adjectives and *-(r)u* for verbs) here anchor the time of this discovery to the speech time. The nonpast tense forms in (15a) and (16b), on the other hand, mark a generic tense associated with a universal statement.

These explanations can perhaps be extended to time-bound topic sentences seen in (17b) below.

- (17) a. *Taroo ga hasit-ta.*
 Taro NOM run-PST
 ‘Taro NOM ran.’
- b. *Taroo wa hasit-ta.*
 Taro TOP run-PST
 ‘Taro ran.’

That is, while (17a) describes an occurrence of a particular event at a time prior to the speech time, (17b) describes the nature of the topic referent – that Taro was engaged in the running activity – as a universal truth of the referent, but universal only with respect to a specifically bound time marked by the past tense suffix.

Topics need not be subjects, and indeed any major sentence constituent, including adverbs, may be marked as topic in Japanese, as shown below.

- (18) a. *Sono hon wa Taroo ga yon-de i-ru.*
 that book TOP Taro NOM read-GER be-NONPST
 ‘As for that book, Taro is reading (it).’
- b. *Kyoo wa tenki ga yo-i.*
 today TOP weather NOM be. good-NONPST
 ‘As for today, the weather is good.’
- c. *Sonnani wa hayaku wa hasir-e na-i.*
 that.way TOP quickly TOP run-POTEN NEG-NONPST
 ‘That quickly, (I) cannot run.’

7.5 Complex sentences

Like other Altaic languages, compound sentences in Japanese do not involve a coordinate conjunction like English *and*. Instead, clauses are connected by the use of inflected verb forms, as in (19a) below, where the *-i* ending is glossed in the HJLL series as either INF (infinitive) or ADVL (adverbial) following the Japanese term *ren'yō-kei* for the form. While the *-i* ending in the formation of compound sentences is still used today, especially in writing, the more commonly used contemporary form involves a conjunctive particle *-te* following the *-i* infinitive form, as in (19b) below. In HJLL, this

combination is glossed as GER (gerund), though the relevant Japanese forms do not have the major nominal use of English gerund-forms.

- (19) a. *Hana wa sak-i, tori wa uta-u.*
 flower TOP bloom-INF bird TOP sing-NONPST
 ‘Flowers bloom and birds sing.’
 b. *Hana wa sa-i-te, tori wa uta-u.*
 flower TOP bloom-GER bird TOP sing-NONPST
 ‘Flowers bloom and birds sing.’

Both the *-i* and *-ite* forms play important roles in Japanese grammar. They are also used in clause-chaining constructions for serial events (20a), and in complex sentences (20b)-(20d), as well as in numerous compound verbs (and also in many compound nouns) such as *sak-i hokoru* (bloom-INF boast) ‘be in full bloom’, *sak-i tuzukeru* (bloom-INF continue) ‘continue blooming’, *sa-i-te iru* (bloom-GER be) ‘is blooming’, and *sa-i-te kureru* (bloom-GER GIVE) ‘do the favor of blooming (for me/us)’.

- (20) a. *Taroo wa [ok-i/ok.i-te], [kao o ara-i/arat-te],*
 Taro TOP rise-INF/rise-GER face ACC wash-INF/wash-GER
[gohan o tabe-ta].
 meal ACC eat.PST
 ‘Taro got up, washed his face, and ate a meal.’
 b. *Taroo wa [sakana o tur-i] ni it-ta.*
 Taro TOP fish ACC catch-INF DAT go-PST
 ‘Taro went to catch fish.’
 c. *Taroo wa [aruk-i nagara] hon o yon-da.*
 Taro TOP walk-INF SIMUL book ACC read-PST
 ‘Taro read a book while walking.’
 d. *Taroo wa [Hanako ga ki-ta no] ni awa-na-katta.*
 Taro TOP Hanako NOM come-PST NM DAT see-NEG-PST.
 ‘Taro did not see (her), even though Hanako came.’

(20d) has the nominalized clause marked by the particle *no* followed by the dative *ni*, also seen in (20b) marking the purposive form. In modern Japanese the *no-ni* sequence has been reanalyzed as a concessive conjunction.

7.6 Context dependency

The context dependency of sentence structure in Japanese is much more clearly pronounced than in languages like English. Indeed, it is rare that Japanese sentences express all the arguments of a verb such as a subject (or topic) and an object noun phrase included in the sentences used above for illustrative purposes. A typical dialog would take the following form, where what is inferable from the speech context is not expressed.

- (21) a. Speaker A: *Tokorode, Murakami Haruki no saisin-saku*
 by.the.way Murakami Haruki GEN newest-work
 yon-da ka.
 read-PST Q
 ‘By the way, have (you) read Haruki Murakami’s latest work?’
- b. Speaker B: *Un, moo yon-da.*
 uh-hu already read-PST
 ‘Uh-hu, (I) have already read (it)’.

In (21a) A’s utterance is missing a subject noun phrase referring to the addressee, and B’s response in (21b) is missing both subject and object noun phrases. In some frameworks, sentences like these are analyzed as containing zero pronouns or as involving a process of “pro drop,” which deletes assumed underlying pronouns. This kind of analysis, however, ignores the role of speech context completely and incorporates information contextually available into sentence structure. In an analysis that takes seriously the dialogic relationship between speech context and sentence structure, the expressions in (21) would be considered full sentences as they are.

7.7 Predicative verbal complexes and extenders

Coding or repeating contextually determinable verb phrases, as in (21b), is less offensive than expressing contextually inferable noun phrases, presumably because verb phrases have the predication function of assertion, and because they also code a wide range of other types of speech acts and of contextual information pertaining to the predication act. Declarative sentences with plain verbal endings like the one in (21b) are usable as “neutral” expressions in newspaper articles and literary works, where no specific reader is intended. In daily discourse, the plain verbal forms “explicitly” code the speaker’s attitude toward the hearer; namely, that the speaker is treating the hearer as his equal or inferior in social standing, determined primarily by age, power, and familiarity. If the addressee were socially superior or if the occasion demanded formality, a polite, addressee honorific form with the suffix *-masu* would be used, as below.

- (22) *Hai, moo yom-i-masi-ta.*
 yes already read-INF-POL-PST
 ‘Yes, (I have) already read (it).’

Referent honorific forms are used when the speaker wishes to show deference toward the referent of arguments – subject honorific and object honorific (or humbling) forms, depending on the type of argument targeted. If (21b) were to be uttered in reference to a social superior, the following would be more appropriate:

- (23) *Un, (Yamada-sensei wa) moo yom-are-ta.*
 uh-hu (Yamada-professor TOP) already read-SUB.HON-PST
 ‘Uh-hu, (Professor Yamada has) already read (it).’

This can be combined with the polite ending *-masu*, as below, where the speaker’s deference is shown to both the referent of the subject noun phrase and the addressee:

- (24) *Hai, (Yamada-sensei wa) moo yom-are-masi-ta.*
 Yes (Yamada-professor TOP) already read-HON-POL-PST
 ‘Yes, (Professor Yamada has) already read (it).’

As these examples show, Japanese typically employs agglutinative suffixes in the elaboration of verbal meanings associated with a predication act. The equivalents of English auxiliary verbs are either suffixes or formatives connected to verb stems and suffixed forms in varying degrees of tightness. These are hierarchically structured in a manner that expresses progressively more subjective and interpersonal meaning as one moves away from the verb-stem core toward the periphery. For example, in the following sentence a hyphen marks suffixal elements tightly bonded to the preceding form, an equal sign marks a more loosely connected formative, which permits insertion of certain elements such as the topic particle *wa*, and a space sets off those elements that are independent words following a finite predicate form, which may terminate the utterance.

- (25) *(Taroo wa) ik-ase-rare-taku=na-katta rasi-i mitai*
 (Taro TOP) go-CAUS-PASS-DESI=NEG-PST CONJEC-NONPST UNCERT
des-u wa.
 COP.POL-NONPST SFP
 ‘(Taro) appears to seem to not want to have been forced to go, I tell you.’

The final particle *wa* above encodes the information that the speaker is female. A male speaker would use *yo* or *da yo*, the latter a combination of the plain copula and *yo*, instead of *desu wa* above, or combinations such as *da ze* and *da zo* in rough speech.

Non-declarative Japanese sentences, on the other hand, frequently suppress auxiliary verbs, the copula, and the question particle, especially in casual speech, where intonation and tone of voice provide clues in guessing the intended speech act. Casual interrogatives take the form of (26a) with a nominalization marker bearing a rising intonation, marked by the question mark in the transcription, whereas fuller versions have the interrogative particle *ka* or a combination of the polite copula and *ka*, as in (26b).

- (26) a. *Moo kaer-u no?*
 already return-NONPST NM
 ‘Going home already?’
- b. *Moo kaer-u no (des.u) ka.*
 already return-NONPST NM (COP.POL-NONPST) Q
 ‘Going home already?’

Requests are made with the aid of an auxiliary-like “supporting” verb *kureru* ‘GIVE (ME THE FAVOR OF ...)’; its polite form *kudasai*, or its intimate version *tyoodai*, as seen in (27a). Again, these forms are often suppressed in a highly intimate conversation and may result in a form like (27b).

- (27) a. *Hayaku kaet-te kure/kudasai/tyoodai.*
 soon return-GER GIVE.IMP/GIVE.POL-IMP/GIVE.INTI
 ‘(Please) come home soon (for me/us).’
- b. *Hayaku kaet-te ne.*
 soon return-GER SFP
 ‘(Please) come home soon, won’t you?’

The use of dependent forms (e.g., the gerund *-te* form above) as independent sentences is similar to that of subjunctive forms in European languages as independent sentences, as illustrated by the English sentence below.

- (28) *If you would give me five thirty-cent stamps.*

Conditionals are used as independent suggestion sentences in Japanese as well. For example, (29a) has a fuller version like (29b) with the copula as a main-clause verb, which can also be suppressed, giving rise to the truncated form (29c).

- (29) a. *Hayaku kaet-tara?*
 quickly return-COND
 lit. ‘If return quickly.’ ‘Why don’t you go home quickly?’

- b. *Hayaku kaet-tara ikaga des-u ka.*
 quickly return-COND how COP.POL-NONPST Q
 lit. 'How would it be if (you) went home quickly?'
- c. *Hayaku kaet-tara ikaga?*
 quickly return-COND how
 'Why don't (you) go home quickly?'

Understanding Japanese utterances requires full recourse to the elements of speech context, such as the nature of the speaker and the hearer and the social relationship between them, the information "in the air" that is readily accessible to the interlocutors, and the formality of the occasion. Indeed, the difficult part of the art of speaking Japanese is knowing how much to leave out from the utterance and how to infer what is left unsaid.

8 Conclusion

Many of the interesting topics in Japanese grammar introduced above are discussed in great detail in the Lexicon-Word Formation volume, the Syntax volume, and the present Semantics and Pragmatics volume of the HJLL series.. The Historical Linguistics volume also traces developments of some of the forms and constructions introduced above. The Sociolinguistics volume gives fuller accounts of sentence variations motivated by context and discourse genre.

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Appendix: List of abbreviations for HJLL

1	first person
2	second person
3	third person
A	agent-like argument of canonical transitive verb
ABL	ablative
ACC	accusative
ACOP	adjectival copula
ADJ	adjective
AND	adnominal
ADV	adverb(ial(izer))
ADVL	adverbial
ADVPART	adverbial particle
AGR	agreement
AGT	agent
ALL	allative
AN	adjectival noun
ANTIP	antipassive
AP	adverbial particle, adjective phrase
APPL	applicative
ART	article
ASP	aspect
ATTR	attributive
AUX	auxiliary
AUXV	auxiliary verb
C	consonant
CAUS	causative
CLF	classifier
COHORT	cohortative
COM	comitative
COMP	complementizer
COMPL	completive
CONC	concessive
CONCL	conclusive
COND	conditional
CONJEC	conjectural
CONJCT	conjunctive
CONT	continuative
COP	copula
CVB	converb
DAT	dative

D	demonstrative
DECL	declarative
DEF	definite
DEM	demonstrative
DET	determiner
DESI	desiderative
DIST	distal
DISTR	distributive
DO	direct object
DU	dual
DUR	durative
EMPH	emphatic
ERG	ergative
ETOP	emphatic topic
EVID	evidential
EXCL	exclamatory, exclusive
EXPL	expletive
FOC	focus
FUT	future
GEN	genitive
GER	gerund(ive)
H	high (tone or pitch)
HON	honorific
HUM	humble
IMP	imperative
INCL	inclusive
IND	indicative
INDEF	indefinite
INF	infinitive
INS	instrumental
INT	intentional
INTERJEC	interjection
INTI	intimate
INTR	intransitive
IO	indirect object
IRR	irrealis
ITERA	iterative
k-irr	k-irregular (<i>ka-hen</i>)
L	low (tone or pitch)
LB	lower bigrade (<i>shimo nidan</i>)
LM	lower monograde (<i>shimo ichidan</i>)
LOC	locative

MPST	modal past
MVR	mid vowel raising
N	noun
n-irr	n-irregular(<i>na-hen</i>)
NCONJ	negative conjunctual
NEC	necessitive
NEG	negative
NM	nominalization marker
NMLZ	nominalization/nominalizer
NMNL	nominal
NOM	nominative
NONPST	nonpast
NP	noun phrase
OBJ	object
OBL	oblique
OPT	optative
P	patient-like argument of canonical transitive verb, preposition, post- position
PART	particle
PASS	passive
PST	past
PCONJ	present conjunctual
PERF	perfective
PL	plural
POL	polite
POLCOP	polite copula
POSS	possessive
POTEN	potential
PP	prepositional/postpositional phrase
PRED	predicative
PRF	perfect
PRS	present
PRES	presumptive
PROG	progressive
PROH	prohibitive
PROV	provisional
PROX	proximal/proximate
PST	past
PSTCONJ	past conjunctual
PTCP	participle
PURP	purposive
Q	question/question particle/question marker

QD	quadrigrade (<i>yodan</i>)
QUOT	quotative
r - irr	r - irregular (<i>ra-hen</i>)
REAL	realis
RECP	reciprocal
REFL	reflexive
RES	resultative
RESP	respect
S	single argument of canonical intransitive verb, sentence
SBJ	subject
SBJV	subjunctive
SFP	sentence final particle
SG	singular
SIMUL	simultaneous
s - irr	s-irregular (<i>sa-hen</i>)
SPON	spontaneous
SPST	simple past
STAT	stative
TOP	topic
TR	transitive
UB	upper bigrade (<i>kami-nidan</i>)
UNCERT	uncertain
UM	upper monograde (<i>kami-ichidan</i>)
V	verb, vowel
VN	verbal noun
VOC	vocative
VOL	volitional
VP	verb phrase

Languages

ConJ	contemporary Japanese
EMC	Early Middle Chinese
EMJ	Early Middle Japanese
EOJ	Eastern Old Japanese
J-Ch	Japano-Chinese
LMC	Late Middle Chinese
LMJ	Late Middle Japanese
JPN	Japanese
MC	Middle Chinese

MJ	Middle Japanese
MK	Middle Korean
ModJ	Modern Japanese
OC	Old Chinese
OJ	Old Japanese
pJ	proto-Japanese
pK	proto-Korean
SJ	Sino-Japanese
Skt	Sanskrit

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Wesley M. Jacobsen and Yukinori Takubo

Introduction

1 Goals and organization of the volume

Meaning is, at a fundamental level, something that one human being intends to convey, or that is actually conveyed, to another human being in an act of communication that may take place in any of a number of ways, linguistic or non-linguistic. Meaning in the specifically linguistic sense, however, is mediated by forms that convey meaning in a particular way agreed upon by a linguistic community, making it possible to abstract away from the role of the participants in the act of communication and to speak of meaning as residing in the forms themselves. Meaning of this kind is what forms the subject matter of semantics. At the same time, such forms are exploited on a daily basis by the linguistic community in constantly changing contexts of use to convey things that go beyond the conventionalized meaning of the forms themselves, ultimately giving rise to new connections between form and meaning that motivate change in the ever-evolving organic entity that is natural language. Meaning of this second kind is what forms the subject matter of pragmatics. The present volume presents a collection of studies on linguistic meaning in Japanese that encompasses meaning of both these types.

The differing forms and the differing relationships between form and meaning licensed by differing linguistic communities, and the differing ends to which such forms are put to use in the various cultures they represent, give rise to a wealth of surface diversity among the world's languages. Much of the work conducted in the dominant paradigms of linguistics today is motivated by a desire to find universals beneath that surface diversity, taking it as a given that there is no meaning expressible in one language that cannot be expressed in some way in any other language. Success in the search for universals is, however, predicated on first documenting and analyzing the diversity that exists, and it is toward that end that the studies in this volume on linguistic meaning in the particular language of Japanese are offered. It is apparent that, whether or not the categories of meaning underlying all languages are themselves universal, languages vary significantly in the relative richness of formal expression they impart to certain types of meaning over others. In the case of Japanese, areas of meaning that are particularly salient for the intricacy of expression they receive in the formal grammar include the encoding of the participant structure of events, temporal categories, conditional and other sorts of irrealis meaning, source and status of information, speaker-hearer and other interpersonal social relationships, and discourse organization. Among the broad range of phenomena covered in the present volume, topics such as these are given particular prominence for the unique potential they have to inform the broader linguistic study of semantics and pragmatics.

Together with aiming for coverage of a broad diversity of linguistic phenomena, this volume aims at the same time to give representation to a diversity of frameworks, both western and native Japanese, in keeping with one of the primary objectives of the HJLL series to bring together research in these two traditions that has largely been pursued separately in the past, and even in the present. Although roughly two thirds of the authors contributing to this volume have received their linguistic training in the west, the ratio of authors pursuing careers in Japan is also roughly two thirds, so that the contributors to this volume are uniquely positioned to bridge these historically distinct traditions. The studies in this volume collectively represent a range of ideas and approaches that are currently most influential in the study of the semantics and pragmatics of Japanese.

The overall organization of the volume is one that owes its conceptual basis to a model that has long currency in the native tradition of Japanese grammar whereby the linguistic clause consists of a multiply nested structure centered in a propositional core of “objective” meaning around which forms are deployed that express progressively more “subjective” meaning as one moves away from the core toward the periphery of the clause. Although our adoption of this model is primarily for the sake of convenience and is not intended to promote any facile demarcation between “objective” and “subjective” categories of meaning, it does serve to cast in relief the very question of if and how such a distinction can be justified, a question that surfaces in various ways throughout the volume (see, for example, Chapter 3 in Section IV by Magdalena Kaufmann and Sanae Tamura and Chapter 2 in Section VI by Barbara Pizziconi).

Following this model, Section I and Section II of the volume treat aspects of meaning associated with the propositional core, including elements of meaning that are structured in lexical units making up the propositional core (verbs and nouns), as well as elements of meaning that are defined at the level of propositions as a whole (e.g., argument structure, scope relations within clauses) or between different propositions (e.g., inter-clausal logical relationships). Outside this core are forms that situate propositions in time as events, with a shift in the direction of greater subjectivity, as events are not only oriented in language relative to the time of the speaker (the study of tense) but are also characterized by the speaker to have varying shapes and qualities in time (the study of temporal aspect), topics that form the subject matter of Section III.

It is then but a short conceptual step from situating events in time to situating events in reality. Section IV examines the numerous mechanisms available in Japanese for distinguishing events that are seen to occur in the actual world of the speaker from those that are seen to occur in any of a number of possible, non-actual worlds, including those hoped for (desiderative meaning), denied (negation), hypothesized (conditional meaning), or viewed as ethically or epistemologically possible or necessary (epistemic and deontic modality). Located yet more to the periphery of the Japanese clause, and a step in the direction of even greater subjectivity, is a rich array of devices for marking propositions as relatively closer to or farther from the speaker

according to the degree to which the speaker is committed to their veracity, including devices that mark differing perceptual and cognitive modalities by which information enters the consciousness of the speaker and devices for distinguishing information variously presupposed by and asserted by the speaker. These and other aspects of meaning having to do with speaker-oriented modality form the content of Section V.

The final section, Section VI, treats aspects of meaning that are most highly subjective in being most grounded in the context of the speaker, including those that gauge social relationships and distance between the speaker and other speakers (honorifics and polite language), as well as meanings that are not conveyed by conventional linguistic forms but are rather generated by an interaction between linguistic form and context (conversational implicature and pragmatics).

The volume seeks to achieve a balance in highlighting both insights that semantic and pragmatic theory has to offer to the study of Japanese as a particular language and, conversely, contributions that Japanese has to make to semantic and pragmatic theory at large, particularly in those areas of meaning seen above to be either uniquely encoded, or encoded to a higher degree of specificity, in Japanese by comparison to other languages, such as participant structure, time, irrealis modality, speaker modality, social deixis, and discourse organization.

2 Contributions of the current volume

The eighteen chapters that make up the volume are organized into the six sections described above as follows:

Section I: Word-level semantics (2 chapters)

Section II: Proposition-level semantics (3 chapters)

Section III: The semantics of time (3 chapters)

Section IV: The semantics of reality (3 chapters)

Section V: The semantics of information: speaker-oriented modality (3 chapters)

Section VI: Meaning in context: inter-speaker modality and pragmatics (4 chapters)

What follows is a summary highlighting the principal contributions made by each of the chapters in this volume to the study of Japanese semantics and pragmatics.

Section I. Word-level semantics

Section I focuses primarily on meaning at the level of the word. In the opening chapter, Yo Matsumoto reviews some basic issues in the semantics of verbs in Japanese, focusing on general properties of major verb classes in the language. After considering

past proposals for the classification of verbs in Japanese according to their syntactic and morphological behavior, he argues for a finer classification within the category of object-change verbs and subject-action verbs than in past proposals in order to account for the fact that some causative object-change verbs incorporate not just result but also means of causation, and some subject-action verbs imply occurrence of change in some sense. Matsumoto further points out that subject-change verbs are frequently used in Japanese to describe events that, considered cross-linguistically, are not normally described by such verbs, such as changes of state implying the involvement of an agent. Subject-change verbs can also be used to represent certain nonactual changes of state in Japanese. His discussion confirms the broad range of uses for which subject-change verbs are deployed in the language, in line with earlier characterizations of Japanese as a “become”-type versus “do”-type language. He discusses also semantic characteristics of causative “object-change” verbs, including the role of causativizing affixes, and the use of causative verbs in cases where no result is entailed. His examination of the behavior of these verbs suggests the need to recognize finer-grained semantic structures than provided for in the schematic kind of semantic representations current in existing frameworks of research.

In Chapter 2 of this section, Yuji Nishiyama considers the semantics of nouns and noun phrases (NPs), adopting a two-pronged approach that takes into consideration both the intrinsic meaning of NPs and their semantic functions within a clause. Adopting as a diagnostic for the intrinsic meaning of NPs their behavior in the genitive NP₁ *no* NP₂ ‘NP₂ of NP₁’ construction and clausal NP modification constructions of various types, he distinguishes “saturated nouns” whose meaning is complete in their own right from “unsaturated” nouns that require a variable “parameter” to be satisfied that is lacking in the noun itself, including as a special case “inalienable” nouns whose meaning cannot be interpreted apart from reference to a “base expression.” As diagnostics for varying semantic functions taken by a noun within a sentence, Nishiyama analyzes various types of copular constructions of the form NP₁ *wa* NP₂ *da* ‘NP₁ is NP₂’ as well as *change*-sentences and existential sentences, arguing for the crucial role played by the distinction between “referential” NPs and “variable” NPs in accounting for the various meanings observed in these sentential types. The interaction between an invariant meaning intrinsic to an NP and the differing roles of the latter kind the NP plays within the context of a sentence is fundamental, he argues, to understanding not only the semantic structure of nouns, but to understanding the overall syntactic structure of Japanese, although providing an adequate account for this poses major challenges to existing frameworks of semantic and syntactic theory.

Section II. Proposition-level semantics

The focus in Section II shifts from the level of the word to the level of the proposition, an entity carrying truth value that constitutes the semantic correlate to the

sentence in syntax. Just as logical predicates require the presence of a certain number of “arguments” in order to be interpretable, so do predicates in natural language require a certain number of noun phrases to be present in order for their meaning to be understood, together constituting the so-called argument structure of a predicate. Predicates with their array of noun phrase argument slots can be seen to package the infinitely and continuously interlocked phenomena making up the world into discrete events, each with a finite set of discrete participants. While languages such as English require that, with minor exceptions, every slot in argument structure be overtly filled in surface structure either by a full noun phrase or a pronoun, a “pro-drop” language such as Japanese may leave argument slots unfilled as “zero pronouns” if their identity can be recovered from context or are otherwise mutually understood by the speaker and hearer.

In the first chapter in this section, Wesley Jacobsen considers the question of what kind of objective evidence can be found for determining which noun phrases that may co-occur with a predicate constitute its arguments and which do not in a pro-drop language, where argument structure is not overtly manifested on the surface. While conceptions of argument structure in the linguistic literature are notoriously theory-dependent, this chapter seeks to provide an empirically based foundation for argumenthood in Japanese that correlates with the possibility or not of a speaker denying knowledge of a noun left unexpressed when questioned about its identity by the hearer. For example, in response to A uttering *Tanaka-kun ga katta rasii* ‘It appears Tanaka bought (it),’ and B asking *Nani o?* ‘(Bought) what?,’ A cannot felicitously respond *Siranai* ‘I don’t know,’ pointing to the argument status of the questioned noun phrase. Implications are drawn from this test as to how many arguments are maximally allowed in Japanese, what range of case markers is possible in marking arguments, whether the category of subject can be justified in Japanese even when typically absent in overt form, and the possible kinds of argument configuration that can emerge when morphological affixes that function to alter argument structure in various ways are attached to predicates.

In the second chapter of this section, Takao Gunji provides an in-depth description of formal logical approaches to meaning in Japanese. Following a brief discussion of where to draw the boundary between syntax and semantics, on the one hand, and between semantics and pragmatics, on the other, Gunji proceeds to introduce and illustrate logical concepts such as the distinction between object language and meta-language, the distinction between truth values and truth conditions as “meanings” of sentences, propositional and higher-order logics, semantic types, the compositionality principle of Frege, the syntax-semantics interface, syntactic arguments as generalized quantifiers, modal logic (including tense logic), possible-world semantics, the distinction between entailment, presupposition, and implicature, and referential and bound-variable uses of proforms. In the second half of this chapter, Gunji illustrates how formal logical concepts can be applied to the semantic description of a range of linguistic phenomena specific to Japanese, including its two passive types, so-called

floating quantifiers, the negative polarity item *sika* ‘only,’ subject marking by the focus particles *ga* versus *wa*, copular constructions, and subordinate questions.

In the concluding chapter to this section, Ayumi Ueyama and J.-R. Hayashishita take up the question of the interpretation of quantifier scope in Japanese and its relationship to word order, in particular subject-object-verb (SOV) order versus object-subject-verb (OSV) order. Linguistic research on this phenomenon over the past fifty years has led to a widely-accepted generalization that in SOV order a quantifier in subject position takes wide scope over a quantifier in object position (S>O) but not the other way around (O>S), whereas in OSV order, both readings are possible, although counterexamples to this generalization have also been known to exist where O>S interpretations arise in SOV constructions. Ueyama and Hayashishita argue that the commonly-accepted generalization is a valid one so far as syntax is concerned, but that the operation of extra-syntactic factors must be recognized that give rise to such counterexamples. Acknowledging the involvement of extra-syntactic operations in the interpretation of quantifier scope, they take the position that the semantic representation directly created from a LF (logical form) representation generated by the computational system must be generously underspecified in such a way that it can be modified by such extra-syntactic operations. The challenge to semantic theory thus becomes one of developing an adequate theory of underspecified semantic representation, a challenge taken up in the second half of the chapter. After showing how main stream theories all fail to meet this requirement, Ueyama and Hayashishita introduce an alternative theory in which both the speaker’s knowledge of the world and semantic representations are represented in the form of sets of objects rather than propositions. They show how such a feature makes possible underspecified semantic representations of the required kind and also makes it possible to distinguish two different ways in which a speaker may render introspective judgments, which in turn makes it possible to identify the kind of extra-syntactic operations involved in the O>S reading for SOV order.

Section III. The semantics of time

Section III takes up one of the signature properties of predicates in natural language – their ability to situate events in time. In linguistics, they have traditionally been seen to do this in one of two ways – first, by ordering events in time with respect to each other or to some reference point (the category of tense) and second, by giving shape and structure to events in time (the category of aspect). These two temporal functions are often assumed to be distinct from each other, but in practice it is not always clear where the boundary between them is to be drawn.

In the first chapter in this section, Wesley Jacobsen argues that the difficulty in drawing such a boundary is because reference to temporal structure inherently involves reference to subparts of the structure that are themselves ordered in time

and, conversely, events ordered in time can often be conceived of as subparts of a larger temporal structure under which the events are subsumed. In the case of Japanese, this has led to controversy as to whether certain basic morphological forms, such as the “nonpast” affix *-ru* and “past” affix *-ta*, mark categories of tense or aspect. By adhering to a careful definition of what is meant by tense and aspect, Jacobsen argues that both categories are relevant to Japanese verb morphology, but that individual forms such as *-ru*, *-ta*, and the progressive/resultative *-tei-* form exhibit uses that range over both of these categories, a fact attributable to the fundamental interrelationship existing between them as described above. Among the many areas where tense and aspect can be seen to overlap in the grammar of Japanese are phenomena of “relative tense” (tense that is oriented to points in time other than the time of speech) and the behavior of temporal adverbs such as *mada* ‘still’ and *moo* ‘already.’ Going beyond interactions among purely temporal categories of meaning, Jacobsen discusses interactions between temporal and non-temporal categories of meaning, such as transitivity – the number and type of entities that are presented as participating in an event or situation, intentionality – the degree to which human or other agency is involved in bringing about an event or situation, and modality – the degree to which an event or situation is presented as occurring in the real world as opposed to worlds that are merely possible, not necessarily including the real world. Jacobsen argues that the way phenomena of each of these kinds are apprehended in human experience cannot be understood apart from the way such phenomena are seen to unfold, or not unfold, in time, and that the concept of change plays a central role in mediating the interface between such temporal and nontemporal dimensions of meaning in Japanese.

In Chapter 2 of this section, Stefan Kaufmann takes up formal approaches to the treatment of tense and aspect in Japanese. As in many languages, tense and aspect in Japanese are the grammatical categories most crucially involved in realizing temporal displacement – the capacity to refer to and describe states and events at times other than the time of speaking. Formal semantic analysis seeks to identify the meanings of expressions of arbitrary complexity – morphemes, words, phrases – and characterize the ways in which syntactically complex expressions receive their meaning via systematic rules of semantic composition from the meanings of their parts. Kaufmann devotes detailed discussion in this chapter to illustrating how this method is applied to the study of Japanese tense and aspect. He introduces notions with cross-linguistic applicability, such as assumptions about the ontology of states and events, or the architecture of the formal apparatus used in characterizing denotations, in comparative perspective with other languages, especially English, giving careful attention to the theoretical import of significant empirical similarities and differences between the two languages. Specific phenomena discussed by Kaufmann include the interpretation of tense forms in matrix and embedded clauses (especially temporal adjunct clauses), the semantic versatility of the aspectual morpheme *-tei(ru)*, and the role of reference time and discourse structure in establishing temporal relations between

sentences. The chapter aims to be comprehensive yet opinionated – that is, to do justice to major ideas and contributions while also weighing in on debates from the perspective of the author’s own work in the area.

In the final chapter of this section, Mayumi Kudo takes up the discourse functions of tense and aspect in finite verbal predicates in modern Japanese. Kudo argues that the principal function of the four primary tense and aspect forms (*suru/sita*, *site-iru/site-ita*) lies not in the propositional meaning of the atomic events expressed by the clauses in which they occur, but rather in marking various kinds of connectivity in discourse among those clauses. The perfective aspectual forms *suru/sita* mark events as being temporally bounded, having the discourse function of marking sequentiality of events, while the durative aspectual forms *site-iru/site-ita* mark events as temporally unbounded, having the discourse function of marking simultaneity, or overlap, of events. The perfect use of *site-iru/site-ita* expresses counter-sequentiality, that is, out-of-sequence events that occur earlier in actual time but are reported later in the clause-chain of narrative discourse. Kudo contrasts similar but distinct functions of tense in spoken discourse versus narrative discourse. In spoken discourse, which assumes the presence of both a speaker and listener, she characterizes tense as a fundamentally deictic category that orders events and situations expressed in linguistic form with respect to the time of speech of the speaker, the past for events that occur prior to the speech time, whether in perfective aspect or durative aspect, and the nonpast for events that overlap with or occur later than speech time. In narrative discourse, by contrast, where there is no speaker or listener present, tense takes on a non-deictic function of ordering events and situations outside of the time of the act of narration. As unique features taken on by tense forms in narrative discourse, Kudo notes how deictic tense and deictic temporal adverbs can be exploited for non-deictic reference and how the non-past form can be deployed to mark the contents of perception of characters appearing in a narrative.

Section IV. The semantics of reality

In Section IV, the focus shifts to the linguistic expression of various types of modality, including the expression of non-actual states of affairs, an area of meaning that is closely related to temporal meaning and is likewise richly developed in the grammar of Japanese.

Nowhere is this richness more evident than in the area of conditional meaning, Japanese having no less than four distinct forms (*-reba*, *-tara*, *to* and *nara*) ranging over the semantic territory occupied by English *if* and *when*. In the opening chapter of this section, Yukinori Takubo takes up such conditional forms, characterizing the first three (*-reba*, *-tara*, and *to*) as being primarily used with non-stative verbs to make predictive statements about the future, whereas *nara*, the only conditional form where a distinction of tense is seen in the antecedent, has a primarily “epistemic”

function, expressing the content of its antecedent clause as information offered by the addressee, but not necessarily accepted by the speaker. *-Reba* and *-tara* are also distinguished by their ability to express counterfactual meaning, expressing states of affairs the most distant from the actual world among all conditionals, a meaning not possible with *to* and only rarely possible with *nara*. Takubo presents an account of the various kinds of conditional meaning expressed by these four forms in terms of the notion of settledness – whether or not a proposition has a determinate truth value, regardless of whether or not the speaker knows that truth value. He proposes a “geometry of discourse domains” constructed in terms of this notion that makes it possible to relate conditional meaning to the kinds of inference mechanisms involved in conditional reasoning and discourse management, and consisting of four domains: the I-domain, housing unsettled propositions, which do not (yet) have a determinate truth value; the R-domain, housing settled propositions with a determinate truth value; the D-domain, housing propositions whose truth value is known by and immediately accessible to the speaker; and the R-D-domain, housing propositions whose truth value is determinate but not known to the speaker. According to this geometry, predictive conditionals are ones whose antecedents belong to the I-domain, epistemic conditionals are ones whose antecedents belong to the R-D domain, and counterfactual conditionals are ones whose antecedents belonging to the D-domain, propositions whose truth value is known to the speaker, in particular known to be false. Takubo further points out distinctions between conditional types in terms of the character of the consequent clause. Predictive conditionals generally presuppose some general knowledge about causality and the consequent is interpreted as the result of a causing event, usually inducing an “invited inference” corresponding to the inverse of the conditional statement. Epistemic conditionals pose a premise about a current or past state of affairs of unknown truth value and in the consequent state some proposition about that state of affairs, also of unknown truth value. Counterfactual conditionals posit a counterfactual situation by replacing a proposition known to be true with a counterfactual premise and present in the consequent some proposition which is consistent with the new situation thereby created.

Another linguistic device that presents situations as non-actual is negation, a phenomenon Ikumi Imani takes up in the second chapter of this section. She discusses first the relationship between negation and quantificational expressions formed from indeterminate pronouns such as *dare* ‘who’ and *nani* ‘what’ to which are attached particles such as *mo* (often glossed as ‘also’ or ‘even’) and *ka* (often glossed as ‘or’), comparing their behavior with the *sika-nai* ‘only’ construction in terms of their faithfulness to the clause-mate condition commonly understood as a constraint on items sensitive to negation. While it has been widely assumed in the literature that in Japanese indeterminates with particles and other items such as minimizers are negative polarity items (NPIs), Imani outlines evidence for treating these rather as a distinct category of “negative concord items.” In the second half of the chapter, she discusses a celebrated claim by Susumu Kuno that the scope of the negative morpheme *nai*

may not extend over a verb/adjective form or a noun/quasi-adjective cum copula form that immediately precedes it. Kuno took a functional approach to explain the behavior of negation, assuming two types of information structure in Japanese: fill-in-the-blank and multiple-choice structure. Imani points out phenomena of negation that this hypothesis is not able to account for and proposes an alternative approach to negative sentences in Japanese, claiming that the openness or closedness of the set of alternative answers plays a significant role in accounting for cases such as those discussed by Kuno. She also discusses how metalinguistic negation is distinguished from sentential negation in Japanese in terms of whether or not a set-theoretical computation is made.

In the third and final chapter of Section V, Magdalena Kaufmann and Sanae Tamura take up modal expressions involving necessity and probability in Japanese, linguistic devices that involve displacement from actual reality to states of affairs that are merely imagined, presenting formal-semantic analyses of these expressions in comparative perspective with classical treatments of modality in the native Japanese linguistic tradition and western traditions of cognitive and functional linguistics. They delineate three basic categories of such modal expression: epistemic (relating to knowledge and belief), prioritizing (relating to rules, preferences, and goals), and dynamic (relating to inherent and learned abilities of individuals as well as constraints in the external world), introducing for each category Japanese expressions typically associated with it and categorizing them according to their morphosyntactic properties. Kaufmann and Tamura single out for special consideration four particularities of the overall system of modality in Japanese: (a) the close relationship between epistemic modality and evidentiality and how these should be mutually distinguished, (b) the prominent role of conditional-like constructions in the expression of prioritizing modality, without exact parallels in Indo-European languages, (c) the tendency of Japanese modal expressions to be limited in meaning to one of the three modal categories, without the kind of overlap between categories exhibited in English and other languages, and (d) the question of whether the distinction between strong and weak necessity modals such as seen in English *have to* versus *should* is realized in the Japanese system. They explore, finally, the notion of “subjectivity,” one that has been central to the native Japanese tradition of linguistics but is still relatively understudied in Western formal-semantics. While adopting a weak lexico-grammatical approach to this notion, they consider the possible relevance of formal-semantic studies and techniques for a detailed investigation of subjectivity in the Japanese modal system.

Section V. The semantics of information: speaker-oriented modality

Section V highlights semantic phenomena centering on the role of the speaker in receiving, processing, and conveying information. In the opening chapter to the section, Yurie Hara takes up evidentials, linguistic devices by which the speaker marks the source or degree of information in her utterance and which allow the speaker to express uncertain information without violating the Maxim of Quality, a Gricean conversational maxim that dictates “Do not say that for which you lack adequate evidence.” Japanese has a rich paradigm of sentence-final auxiliaries for encoding evidentiality, including *yoo-da/mitai-da/rasii* ‘it seems/appears that ...,’ *Proposition+soo-da* ‘I hear/understand that ...,’ and *Verb infinitive (V_{inf})+soo-da* ‘it looks like ...’. Hara provides an overview in this chapter of possible ways of treating evidential forms in a formal semantic framework, the literature on which has centered around two main questions: (1) what counts as evidence? and (2) what level of meaning does the evidential sentence contribute to: at-issue commitment, presupposition, conversational implicature, or expressive meaning (conventional implicature)? Hara considers various recent formal analyses of the evidential *yoo-da* that address these two questions and proposes two linguistic phenomena in Japanese that do not traditionally fall within the scope of evidentiality but can be shown to give rise to evidential interpretations: the causal connectives *kara/node* and the deaccenting of adjectives in rising declarative questions.

Chapter 2 of this section by Tomohide Kinuhata surveys presupposition-related phenomena in Japanese. The chapter opens with a description of Japanese correlates to various phenomena of presupposition that have been discussed in the linguistic literature, primarily with regard to English, with particular attention to constructions that can be seen to trigger presuppositions, projection problems arising from different types of operators such as holes, plugs, and filters, pragmatic aspects of presupposition, in particular anaphoric relationships that can be seen to hold between triggered presuppositions and the preceding discourse, and the difference between presuppositions and implicatures of both the conversational and conventional type. In the latter half of the chapter, Kinuhata considers various Japanese-specific phenomena related to presupposition, making the following observations and arguments. First, proper nouns pragmatically presuppose the existence of their referent, but the presupposition is lost when the proper noun appears in the construction ‘... *toyuu* N ‘a noun called ...’ Second, certain factive predicates allow their complements to be marked with either of the complementizers *koto* and *to*, but with the latter the presupposition of factivity in the embedded proposition is lost so that the construction functions instead as a plug-operator very much like that which operates with verbs of saying. Thirdly, in the *S noda* ‘it is that S’ construction, S may function to convey the presupposition of another sentence previously uttered, a use that is difficult to account for under the popular analysis of *S noda* as having an “explanatory” function. Kinuhata

argues that this construction constitutes the highly unusual situation of a sentence having no assertive force. Fourthly and finally, while manner and evaluative adverbials usually do not carry a presupposition of truth of the proposition they modify, certain evaluative adverbials having an exceptionally complex semantic character such as *sekkaku* ‘go to the trouble of’ and *yoku* ‘well’ do have semantic or pragmatic presuppositional content, respectively.

In the final chapter of Section V, Elin McCready and Christopher Davis consider formal approaches to sentence final particles (SFPs) in Japanese, with particular attention to question particles, as exemplified by *ka*, notification particles, as exemplified by *yo*, and confirmation particles, as exemplified by *ne*. After providing a careful description of the discourse functions these particles play in actual contexts of use, both singly and in combination with each other, they take up a puzzling feature of their behavior in appearing to code *semantically* certain *pragmatic* aspects of the role their host utterance plays in discourse and note the challenge this poses for the traditionally accepted view of the semantics-pragmatics interface whereby a semantic representation is computed on the basis of syntactic and lexical input, and this semantic representation in turn forms the input to pragmatics. Given that the kind of meaning indicated by sentence-final particles cannot therefore be of the “at-issue” semantic type, McCready and Davis propose that the most promising approach lies in treating these particle as either presuppositional or expressive in nature, but that difficulties in the applicability of currently available tests for determining which of these approaches is superior requires that a final verdict on this question be left to future research.

Section VI. Meaning in context: inter-speaker modality and pragmatics

In Section VI the focus shifts squarely to the interaction between form and context in the generation of meaning. The opening chapter by Yukinori Takubo deals with deictic phenomena associated with nominal expressions in Japanese, in particular what Takubo calls personal nouns (as opposed to personal pronouns in languages such as English), terms of address, and demonstratives. He notes that expressions for referring to first, second, and third person in Japanese form an open class, unlike personal pronouns in English and exhibit no agreement with the predicate, thereby constituting a class of “personal nouns” distinct from personal pronouns. Reference to person in Japanese may also be accomplished through the use of various terms of address, including proper names, kinship terms, and terms for vocational roles such as *sensei* ‘teacher.’ In the latter half of the chapter, Takubo takes up Japanese demonstratives, a closed class of expressions with rich morphological variation used for pointing to entities either in the physical or linguistic context. Parting from the traditional treatment of demonstratives as forming a tripartite system of the *ko*-, *so*- and

a-type, Takubo argues for a binary classification of these, with the *ko*- and *a*-types on the one hand opposed to the *so*-type on the other, the former capable of making independent reference to entities and the latter not capable of independent reference, depending instead on another noun phrase for its reference. Takubo argues that analyzing demonstratives in this way makes it possible to provide a unified account of both visible and non-visible uses of demonstratives while at the same time accounting for their syntactic behavior, such as the fact that *so*-type, but not *ko*-type or *a*-type, noun phrases allow a co-variant interpretation. In the concluding part of this chapter, Takubo outlines how visible uses of *so*-NPs can be accounted for in the binary system under a minimal number of natural assumptions about how distance from an entity is measured by the speaker when an addressee is present.

In Chapter 2 of this section, Barbara Pizziconi provides an account of a range of linguistic forms that have been treated in the literature, implicitly or explicitly, as enabling ‘social deixis’ and critiques a number of analytical approaches to its study. After surveying debates about the scope of the domain of ‘deixis’ that have implications for the analysis of Japanese forms, she proceeds to provide a critical assessment of accounts of social deixis that have been proposed within different domains of linguistics, such as the field of modality studies, which has focused on the sentential distribution of such forms and the cognitive quality of “subjectivity” that these forms are argued to invariably convey, the field of sociolinguistics, which has explored sociological correlates of the usage of such forms, and the field of pragmatics, where attempts have been made to explain dynamism in the use of these forms in terms of intention of the speaker and other contextual variables. In the latter part of the chapter, Pizziconi narrows the focus to deixis itself and its properties. Forms expressing “social deixis” provide different kinds of structural information, both referential and non-referential, denotational and attitudinal, and the variety of meanings commonly associated with such forms – related to class, gender, affect, deference, and identity – illustrate their rich indexical quality. Pizziconi concludes the chapter with a call for an approach to the study of these forms that is able to capture their dynamism and pliability, their rich pragmatic nuances, their metapragmatic significance, and, last but not least, their socially contested nature.

In Chapter 3, Satoshi Tomioka takes up the phenomenon of conversational implicature. By way of an everyday illustration of this phenomenon, Tomioka offers the example of speaker A telling his friend B that he is hungry and B replying that there is a leftover pizza in the fridge. Speaker A would in such a situation feel entitled to eat the pizza despite the fact that what B actually uttered says nothing about permission to eat it. This additional sense of permission exemplifies conversational implicature, a type of meaning that is not entailed by what is said but is inferable from it based on rules of conversation. Since the time that Paul Grice originally formulated these rules, they have undergone some change and transformation from what Grice initially envisioned, although their relevance to semantic and pragmatic theory has far from diminished. Tomioka provides in this chapter a concise review of various

theoretical facets of conversational implicature, with special focus on quantity/scalar implicatures. He singles out as particularly noteworthy the recent emergence of a “localist” approach to scalar implicatures, which holds that scalar implicatures may be generated in local contexts such as embedded clauses, a view that contrasts sharply with the traditional Gricean approach in which all conversational implicatures arise through post-semantic inferences. While it is generally believed that the principles that govern conversational implicature are universal, Tomioka argues that there are instances of cross-linguistic variation and in the second half of the chapter examines several case studies from Japanese as examples of this, including politeness and honorific marking, scalar meaning in the contrastive topic marker *-wa*, the meaning of actual occurrence taken by root modals in the episodic past tense, and the ignorance implicature associated with indefinites of the form *wh-ka* ‘someone, something, somewhere, etc.’ All of these phenomena are subject to controversy, however, regarding whether they should indeed be treated as conversational implicatures or rather as conventional meanings such as entailments, presuppositions, or conventional implicatures.

In the concluding chapter of this section, and of this volume, Noriko Iwasaki takes an in-depth look at the research literature on fillers in Japanese, vocalizations that may appear to be so far removed from conventional meaning as to be “meaningless,” but which turn out upon closer examination to function in various ways as discourse markers. Past research on fillers in Japanese, often taking its cue from the more extensive body of research on English fillers, has endeavored to provide unified accounts of the polysemy of discourse markers and to situate fillers as one of several functions of such markers. The research suggests that each filler, regardless of whether it originates in a quasi-linguistic vocal gesture (e.g. *e*, *etto*) or in a conventional lexical form (e.g. *ano*, *ma*, *nanka*), has its own pragmatic meaning distinct from other fillers. Iwasaki notes that certain features of their meaning may be understood as consequences of their unintentional use by the speaker when encountering problems in production or in monitoring cognitive processes. In such situations, the listener makes inferences based on cooperative principles as formulated in Grice’s Maxims or on principles in relevance theory or, alternatively, the listener may take the perspective of the speaker in inferring the relevant meanings. In the case of fillers derived from demonstratives (*ano*, *sono*, *kono*) or adverbs (*ma*, *nanka*, *yappari*), although the original meaning may have undergone substantial bleaching, certain aspects of the original meaning can nevertheless be seen to contribute to the subjective and intersubjective meanings these exhibit as fillers. In sum, Iwasaki argues that fillers aid speakers, on the one hand, in managing their speech and in signaling their willingness to talk and to participate in the goals of the conversation, and they enable listeners, on the other, to infer attitudes, difficulties in production, and psychological monitoring operations on the part of the speaker, which in turn lead to the generation of pragmatic meanings.

Acknowledgements

The editors wish to express gratitude to the anonymous reviewers of the chapters in this volume, to Emi Mukai for her work on checking the reference citations in this volume and preparing the subject index, to John Haig for his assistance in copyediting the chapters by Yukinori Takubo, and to Michaela Göbels, Monika Pflegar, and the other editorial staff at De Gruyter Mouton for their patient assistance in bringing the manuscript of this volume to publication over the nearly ten years since it was first conceived.

I Word-level semantics

Yo Matsumoto

1 The semantics of Japanese verbs

This chapter is a review of some basic issues in the semantics of Japanese verbs, with special attention to general properties that major classes of verbs exhibit in the language. I will first review past proposals that have been made concerning the classification of verbs in Japanese, and then go on to consider the nature of noncausative/causative verb pairs in Japanese and to discuss various characteristics of noncausative (subject-change) verbs versus causative (object-change) verbs, with a particular focus on verbs involving a change of state.¹

Verb semantics in Japanese has been studied from a variety of perspectives. One line of research has approached verb meaning from a typological perspective, as represented by Ikegami's (1981, 1991) proposal to classify Japanese as a "become-type" language, in contrast with "do-type" languages such as English, based on a cognitive-typological view of language, a proposal that has attracted much attention in the literature. Also in this category may be mentioned Shibatani's (1973, 1976a, b, Shibatani and Pardeshi 2002) crosslinguistically oriented work on causative verbs and Jacobsen's (1992) work on transitivity. Yet another line of research has approached verb meaning from the standpoint of morphology and syntax, an approach seen in verb classifications based on aspect (e.g. Kindaichi 1950; Kudo 1995), and in various studies undertaken within the framework of Kageyama's (1996) Lexical Conceptual Structure (LCS). I will make reference to these works in the course of my own discussion of the nature of Japanese verbs in this chapter.

I have two purposes in mind in undertaking this review of the semantics of Japanese verbs. One is to highlight the typological character of Japanese verbs. It has been argued that intransitive and transitive verbs, or change-of-state verbs and causative change-of-state verbs, have crosslinguistic prototypes, and verbs in particular languages can deviate from those prototypes (e.g., Hopper and Thompson 1980, Haspelmath 1993, Jacobsen 1992, 2016). It is also often argued that Japanese is a language in which intransitive change-of-state verbs are used to describe a wider range of situations than in some other languages, while the semantics of many transitive causative verbs does not exhibit the semantics prototypically associated with those verbs (Teramura 1984; Ikegami 1981, 1991). This view is considered from a variety of perspectives in this chapter, especially in Sections 2, 3, and 4.

The other purpose is to consider the question of how detailed the semantic description of verbs should be. Studies that approach meaning from the standpoint of

¹ This work is in part a result of the NINJAL project "Cross-linguistic Studies of Japanese Prosody and Grammar" (under the direction of Haruo Kubozono). I would like to thank the editors of this volume and Masayuki Ishizuka for various suggestions on improving this chapter. All remaining errors are my own.

morphology and syntax (e.g. Kageyama 1993, 1996) tend to consider only schematic meanings, unlike studies that are more descriptively oriented or encyclopedic in their view of semantics (e.g. Momiyama 2009; Chen and Matsumoto 2018). Even when considering only verb meaning that is sensitive to morphology and syntax, however, how detailed a semantic description must be to account for particular phenomena remains an issue (see Boas 2006). In this chapter, we will at numerous points encounter the need to consider a broad range of meanings in accounting for the behavior of verbs and verb classes.

1 Verb classes

1.1 Aspect-based approach

There have been a number of influential attempts to classify Japanese verbs into semantic classes on the basis of their morphological and syntactic behavior. One particularly celebrated approach is the classification of verbs based on their aspectual behavior, an approach pioneered in the classic study by Kindaichi (1950). Although this approach developed independently of traditions of linguistic research outside Japan, important similarities can be seen between the results of research conducted in this tradition and the aspect-based classification of verbs proposed in the tradition of Vendler (1957) in the West (see Jacobsen 1982; Ogihara 1998 for comparisons between the two traditions).

Kindaichi (1950) based his classification primarily on the meanings taken by the aspectual form *-te i-ru*, which is composed of the gerund ending *-te* (glossed as GER) and the verb *i(-ru)* ‘be/exist’. This form is capable of expressing either a resultative or a progressive sense in the standard dialect (see Kindaichi 1950; Soga 1983; Kudo 1995; Ogihara 1998; Shirai 2000; Iwamoto 2008, etc.). Based on which sense of the *-te i-ru* form a verb takes, Kindaichi (1950) classified Japanese verbs into four categories: stative verbs, durative verbs, punctual verbs, and a special category of verbs that he called “the fourth type.” According to him, durative verbs (e.g. *yom(-u)* ‘read’) are interpreted in the progressive sense with the *-te i-ru* form, while punctual verbs (e.g. *sin(-u)* ‘die’), are interpreted in the resultative sense. Stative verbs (e.g. *i(-ru)* ‘exist’) cannot be used with the *-te i-ru* form, and the extraordinary verbs of “the fourth class” (e.g. *sobie(-ru)* ‘tower over’) can be used only in the *-te i-ru* form.² The first two of these categories are exemplified in (1).

² The claim that verbs like *sobie(-ru)* cannot occur in forms other than the *-te i-ru* form is not confirmed in a recent corpus study (Maekawa 2013).

- (1) a. *Kare wa hon o yon-de i-ru.*
 he TOP book ACC read-GER be-NPST
 ‘He is reading a book.’
- b. *Kare wa sin-de i-ru.*
 he TOP die-GER be-NPST
 ‘He is dead.’

This classification encounters various problems. Fujii (1966) points out that the temporal distinction of durative vs. punctual has nothing to do with the difference in the interpretation of *-te iru*. Some punctual processes that do not involve a change of state, such as *itibetu-su(-ru)* ‘glimpse’, do not produce the resultative reading, while non-punctual change of state verbs like *tukare(-ru)* ‘get tired’ are interpreted as resultative in the *-te iru* form. He uses the term ‘result verbs’ to cover those that induce a resultative reading with *-te iru*, with the distinction of result/nonresult crosscutting the duration-based distinction of durative/punctual (see also Takahashi 1969[1976], Suzuki 1972). Okuda (1977[1985]) argued that what is crucial to the resultative vs. progressive reading of *-te iru* is whether the subject undergoes a change or not, proposing a distinction between subject-change verbs and subject-action verbs, in addition to stative verbs.

More fine-grained aspect-based classifications have been proposed by Kudo (1995) and Nitta (1997). Here I will review Kudo’s classification, which is partially based on observations by Okuda (see also Kudo this volume). Kudo proposes that verbs can be classified into three broad types based on their aspectual nature: (1) external dynamic verbs, (2) internal psycho-state verbs, and (3) stative verbs. She further classifies the first type into (1a) subject-change verbs, (1b) subject-action verbs, and (1c) subject-action/object-change verbs, which she in turn classifies into yet finer subtypes, based on such factors as intentionality and the nature of the processes involved.³

3 The subclasses that Kudo proposes are the following:

- I. Subject-action/object-change verbs:
 - a) change of state or location of the object: *ake(-ru)* ‘open’, *otos(-u)* ‘drop’, *tigir(-u)* ‘tear off’, *tukur(-u)* ‘make’;
 - b) change in possessive relationship: *age(-ru)* ‘give’, *kaw(-u)* ‘buy’.
- II. Subject-change verbs:
 - a) subject-change/subject-action: *ki(-ru)* ‘put (clothes) on oneself’, *katug(-u)* ‘put on one’s own shoulder’;
 - b) volitional change of location or stance: *nobor(-u)* ‘climb’, *kagam(-u)* ‘bend (one’s own body)’;
 - c) nonvolitional change of state or location: *atatamar(-u)* ‘get warm’, *oti(-ru)* ‘fall’.
- III. Subject-action verbs:
 - a) subject-action/object-motion: *tobas(-u)* ‘fly’, *kog(-u)* ‘row’;
 - b) subject-action/object-contact: *ut(-u)* ‘hit’, *kazir(-u)* ‘bite’;
 - c) human cognitive-linguistic and expressive activity: *kazoe(-ru)* ‘count’, *iw(-u)* ‘say’;

Table 1: The verb classification of Kudo (1995)

External dynamic	Subject-change	<i>ak(-u)</i> ‘open _{in} ’, <i>ik(-u)</i> ‘go’, <i>ki(-ru)</i> ‘put (clothes) on oneself’
	Subject-action	<i>aruk(-u)</i> ‘walk’, <i>ut(-u)</i> ‘hit’
	Subject-action/ Object-change	<i>ake(-ru)</i> ‘open _{tr} ’, <i>ire(-ru)</i> ‘put in’, <i>age(-ru)</i> ‘give’
Internal psycho-state		<i>omow(-u)</i> ‘think’, <i>osore(-ru)</i> ‘fear’, <i>itam(-u)</i> ‘hurt’
Stative		<i>i(-ru)</i> ‘be’, <i>kotonar(-u)</i> ‘be different’, <i>sobiete i(-ru)</i> ‘tower over’

The category of internal psycho-state verbs is set up in order to capture certain unique behavioral characteristics of the verbs in that class, such as the fact that their aspectual character is partially dependent on the person of the subject (cf. Kuroda 1973). Stative verbs are verbs that do not have an aspectual contrast between the basic *-ru* form and the *-te iru* form: some are used only in one of those forms (as is the case with Kindaichi’s stative verbs and the fourth-class verbs), while others are used in both forms without much semantic difference. Verbs belonging to this class are relatively few, testifying to the poverty of stative verbs in Japanese.

The distinction among the three subtypes of external action verbs is motivated by the meaning of their *-te iru* forms in the following way. The *-te iru* form of subject-change verbs is interpreted as resultative, while that of the other subtypes, as progressive. The distinction between subject-action and subject-action/object-change verbs is made on the basis of a difference in the interpretation of the *-te iru* form of their passive form: the passive form of the latter is interpreted (primarily) as resultative, as in (2).

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- d) human volitional action: *asob(-u)* ‘play’, *hasir(-u)* ‘run’;
 - e) human long-term activity: *kayow(-u)* ‘commute’, *kuras(-u)* ‘live one’s life’;
 - f) involuntary object movement or phenomenon: *nagare(-ru)* ‘flow’, *kagayak(-u)* ‘shine’.
- IV. Inner psycho-state verbs:
- a) thinking: *omow(-u)* ‘think’, *utagaw(-u)* ‘doubt’;
 - b) feeling: *akogare(-ru)* ‘long for’, *akire(-ru)* ‘be shocked’;
 - c) perception: *kanzi(-ru)* ‘feel’, *kikoe(-ru)* ‘can hear’;
 - d) sensation: *itam(-u)* ‘hurt’, *sibire(-ru)* ‘get numb’.
- V. Stative verbs:
- a) existence: *ar(-u)* ‘exist’, *i(-ru)* ‘exist’;
 - b) spatial positioning: *sobiete i(-ru)* ‘tower over’, *mensite i(-ru)* ‘face’;
 - c) relation: *atehamar(-u)* ‘fit, apply’, *izon su(-ru)* ‘be dependent on’;
 - d) property: *niaw(-u)* ‘match’, *sugurete i(-ru)* ‘be excellent in’.

- (2) *Garasu ga war-are-te i-ru.*
 glass NOM break_{tr}-PASS-GER be-NPST
 ‘The glass is broken (in the state of having been broken).’

Kudo (1995) also recognizes intermediate types between subject-change verbs and subject-action verbs. Among them are verbs that encode both action and change of the subject, such as *ki(-ru)* ‘put (clothes) on oneself’. These refer to actions directed to the agent himself/herself, and are often called “reflexive” (Kudo 1995, Nitta 1982; see also Ka 2017). Kudo classifies these as subject-change verbs, given the resultative reading of their *-te iru* form, although she notes that they also allow a progressive reading in certain cases. It should be noted that the resultative reading arises also for subject-action/object-change verbs (e.g. *tuke(-ru)* ‘attach’) if the action is directed toward the subject, as when one attaches something to his/her own body (Kudo 1995). This suggests that it is not just the meaning of the verb but the meaning of the verb phrase that determines the reading of *-te iru*.

1.2. Aspect and component meanings

Kudo’s classification is based on the idea that the aspectual property of verbs is related to the meaning components they contain (e.g., change and action) (cf. Rappaport Hovav and Levin 1998). However, it is not clear whether a classification based on components of meaning exactly matches the classification based on the aspectual properties of verbs. Let us first examine the relationship between change in the subject and the resultative interpretation. The resultative reading of *-te iru* does not seem to be sensitive only to the presence of a change undergone by the subject. There is an additional constraint that there must be no specification of the cause of or process of the change. This can be seen in the contrast between *sin(-u)* ‘die’ and *zikosi su(-ru)* ‘die due to an accident’, as noted by Takahashi (1985) and illustrated in the differing acceptability patterns between (1b) and (3).

- (3) *Kare wa {*ima wa/sakunen} zikosi si-te i-ru.*
 he TOP now CNT/last.year accident.death do-GER be-NPST
 ‘He is now dead due to an accident/died in an accident last year.’

Unlike (1b), (3) cannot receive a resultative reading in the normal sense in spite of the clear change of state entailed by the sentence, presumably due to the presence of specification of the cause of the change. Instead, it is interpreted in a third reading possible with *-te iru*, a (present) perfect reading, which suggests that the event’s occurrence in the past is recorded in memory. This is confirmed by the unacceptability of *ima(-wa)* ‘now’ and the acceptability of *sakunen* ‘last year’ in (3) (as opposed to the acceptability of *ima(-wa)* in the resultative (1b)).

The required absence of mention of the process of the change accounts for why some subject-change verbs that express agentively executed durative actions may not have a resultative reading, as in (4).

- (4) *Taroo ga kaidan o nobot-te i-ru.*
 Taro NOM stairs ACC climb-GER be-NPST
 ‘Taro is climbing the stairs.’

The *-te i-ru* form of the verb *nobor(-u)* itself can be interpreted either as resultative or progressive, but the presence of the accusative marked path argument in (4) precludes the resultative reading, presumably due to the highlighting of the process of motion.

Moreover, verbs must represent change into a particular, stable state in order for their *-te i-ru* form to be interpreted as resultative. Relevant examples to show this come from certain motion verbs, such as *toor(-u)* ‘pass through’, *mawar(-u)* ‘go around’, *susum(-u)* ‘proceed’, and *nagare(-ru)* ‘flow’. These verbs do represent a change in location, given that it is contradictory to say, for example, (5) in the case of *toor(-u)*.⁴

- (5) **Kare wa soko o toot-ta ga ugok-ana-katta.*
 he TOP there ACC pass.through-PST but move-NEG-PST
 ‘He passed through there, but did not move.’

However, the *-te i-ru* form of these verbs is not interpreted in the resultative, as exemplified in (6), which is interpreted as progressive.

- (6) *Kare wa sono mise no mae o toot-te i-ru.*
 he TOP that shop GEN front ACC pass.through-GER be-NPST
 ‘He is passing in front of the shop.’

The relationship between object change and aspect is not entirely clear, either. Kudo states that the passive forms of subject-action/object-change verbs are interpreted as resultative, while those of subject-action verbs are not. However, the passive form of some subject-action/object-change verbs is primarily interpreted as progressive, as shown in (7a) (see Mihara 1997).

- (7) a. *Miruku ga atatame-rare-te i-ru.*
 milk NOM warm_{tr}-PASS-GER be-NPST
 ‘The milk is being warmed.’

⁴ This is a test similar to the one used in Beavers and Koontz-Garboden (2017).

- b. *Miruku ga 80-do ni atatame-rare-te i-ru.*
 milk NOM 80-degree GOAL warm_{tr}-PASS-GER be-NPST
 ‘The milk has been warmed to 80 degrees.’

The nonresultative interpretation of (7a) may be related to the fact that this kind of degree change verb does not represent change to a specific state. This is in contrast to (7b), which can be interpreted as resultative.

Conversely, the resultative reading is possible for the passive *-te iru* form of certain subject-action verbs that do not entail a change of state, such as *kazir(-u)* ‘bite’ and *huk(-u)* ‘wipe’.

- (8) a. *Ringo ga kazir-are-te i-ru.*
 apple NOM bite-PASS-GER be-NPST
 ‘The apple is (has been) bitten into.’
 b. *Teeburu wa mattaku huk-are-te i-na-i.*
 table TOP at.all wipe-PASS-GER be-NEG-NPST
 ‘The table is not (has not been) wiped off at all.’

These are verbs that typically *suggest* a change. Biting may or may not produce a result in the object bitten, but very often it does; similarly, wiping may or may not end in a clean wiped object, but very often it does. The passivized *-te iru* form appears to be sensitive to such results that typically (but not always) occur (Iwamoto 2008, 2015). The issue that such examples raise is how rich the semantic description of verbs should be. In the frame-semantic view of verb meaning (Boas 2006; Chen and Matsumoto 2018), such “typical” results are included as part of the verb meaning, accounting for why the resultative reading in (8) is possible (see also Nakatani 2007).

1.3 Finer distinctions based on compounding and alternation

Verb classes can be studied in relation to phenomena other than aspect, such as morphological processes (Kageyama 1993) and syntactic constructions (Levin 1993; Boas 2006). In this section I will discuss finer-grained verb classes in Japanese in relation to these phenomena.

Subclasses can be recognized within subject-action/object-change verbs based on meaning components that exhibit different tendencies in terms of their participation in compounding and causative alternation. Kudo’s subject-action/object-change verbs can be classified into two different types in terms of the additional specification of how the result is brought about. Some are pure change-of-state verbs, with no specification of the action by which the result is brought about, such as those in (9).

- (9) *tuke(-ru)* ‘attach’, *koros(-u)* ‘kill’, *das(-u)* ‘make go out’, *war(-u)* ‘break’,
kowas(-u) ‘destroy’, *taos(-u)* ‘topple’

Others specify the action by which the change is brought about, in addition to the change itself. These can be called means+change verbs and include examples such as those in (10).

- (10) *sibar(-u)* ‘tie down, bind’, *musub(-u)* ‘tie (a string)’, *yude(-ru)* ‘boil’, *nage(-ru)* ‘throw’, *nur(-u)* ‘paint’

The verb *sibar(-u)*, for example, requires the use of a rope. These two types correspond respectively to the result verbs and the manner+result verbs of Beavers and Koontz-Garboden (2017) (cf. Rappaport Hovav and Levin 2010).

These two types do not seem to differ crucially in terms of aspect, and Kudo does not make a distinction between the two. However, there are two ways in which they do differ in their morphological properties. First, almost all of the pure change-of-state verbs participate in causative alternation, as we will discuss in the next section, while only a limited number of means+change verbs do so. While all the verbs in (9) except *koros(-u)* participate in causative alternation, only *yude(-ru)* does among those in (10) (see Section 2 below).

Second, pure change-of-state verbs tend to be limited in compound verb constructions to the second verb, while means+change verbs can also be used as the first verb. In this respect verbs of the latter type behave in a way similar to subject-action verbs such as *tatak(-u)* ‘hit’.

- (11) *musubi-tuke(-ru)* (tie-attach) ‘tie together’, *sibari-tuke(-ru)* (bind-attach) ‘bind together’, *tigiri-tor(-u)* (tear-take) ‘tear off’, *musiri-tor(-u)* (pluck-take) ‘pluck off’, *nage-age(-ru)* (throw-raise) ‘throw upward’, *osi-taos(-u)* (push-topple) ‘push down/over’

Kudo’s subject-action verbs may also be divided into two types according to their compatibility with a result phrase. It has been observed that Japanese allows only a limited cooccurrence of verbs with a result phrase (Washio 1997). Washio argues that Japanese allows what he calls weak resultatives, in which the verb has “a disposition towards certain states,” indicating “a potential directed change,” with a resultative phrase representing such a resulting state (Washio 1997: 10, 16). From the standpoint of verb classes, this means that a resultative phrase can occur with 1) pure change-of-state verbs, 2) means+change verbs that specify an action, and 3) action verbs that do not entail a result but typically suggest one, but not with other action verbs, as shown in (12).

- (12) a. *Kare wa sara o konagona-ni wat-ta.*
 he TOP plate ACC in.pieces break-PST
 ‘He broke the plate to pieces.’
- b. *Kanozyo wa kabe o akaku nut-ta.*
 she TOP wall ACC red paint-PST
 ‘She painted the wall red.’
- c. *Hanako wa teeburu o kiree-ni hui-ta*
 Hanako TOP table ACC clean wipe-PST
 ‘Hanako wiped the table clean.’
- d. **Taroo wa boosi o pesyanko-ni ket-ta.*
 Taro TOP hat ACC flat kick-PST
 ‘Taro kicked the hat flat.’

As we saw was the case with the interpretation of the passive *-te iru* form, verbs such as *huk(-u)* ‘wipe’ behave more similarly in this respect to object-change verbs than they do to action verbs.

2 Noncausative/causative verb pairs

2.1 Basic facts

Many verbs belonging to Kudo’s subject-change verbs and subject-action/object-change verbs are morphologically related, forming pairs like the ones commonly found in a wide variety of languages (Nedjalkov and Silnitsky 1973; Haspelmath 1993; Comrie 2006; Pardeshi, Kiryū and Narrog (eds.) 2015). In this section I will discuss the semantic nature of such pairs of verbs in relation to their morphology.

Japanese has more than 300 pairs of such morphologically related verbs (Jacobsen 1992; Narrog, Pardeshi, Kageyama and Akasegawa 2015; Matsumoto 2016). The nature of the relationship between the members of such verb pairs is an issue that has attracted substantial attention in the literature (Sakuma 1936; Okutsu 1967; Shimada 1979; Jacobsen 1992, 2016; Suga and Hayatsu (eds.) 1995; Kageyama 1996; Matsumoto 2000a, b, c, 2016; Maruta and Suga (eds.) 2000; Narrog 2007a, b; Narrog, Pardeshi and Akasegawa 2015). Though commonly referred to as intransitive/transitive verb pairs, for semantic purposes we will here refer to these as noncausative/causative verb pairs (Matsumoto 2016).

Noncausative/causative verb pairs in Japanese are exemplified in (13).

- (13) a. Noncausative verbs (subject-change verbs)

Kabin ga war-e-ru.
 vase NOM break-DA-PST
 'The vase gets broken.'

- b. Causative verbs (object-change verbs)

Kare ga kabin o war-u.
 he NOM vase ACC break-NPST
 'He breaks a vase.'

In many such pairs, one verb is morphologically more complex or more marked than the other. The causative verb *war(-u)* 'break' in (13b), for example, is morphologically unmarked, while the noncausative verb *war-e(-ru)* 'get broken' in (13a) is marked, suffixed by *-e*, one of the decausativizing affixes (DAs) in Japanese. Noncausative/causative verb pairs fall into one of four morphological types: a) noncausative-basic, where the causative member is marked with a causativizing affix (CA); b) causative-basic, where the noncausative member is marked with a decausativizing affix (DA); c) equipollent, where the two members are related by an alternation of stem final segments; d) labile, where a single form functions as either member, as illustrated in (14)-(17). Several different affixes can be observed to mark causativity or noncausativity, and they all have limited productivity.

- (14) Noncausative-basic

- a. *tat(-u)* 'stand_{in}' *tat-e(-ru)* 'stand_{tr}'
 b. *her(-u)* 'decrease_{in}' *her-as(-u)* 'decrease_{tr}'
 c. *mi(-ru)* 'see' *mi-se(-ru)* 'show'

- (15) Causative-basic

- a. *war-e(-ru)* 'get broken' *war(-u)* 'break'
 b. *hasam-ar(-u)* 'be caught between' *hasam(-u)* 'catch between'

- (16) Equipollent

- a. *toor(-u)* 'pass through' *toos(-u)* 'let through'
 b. *kuzure(-ru)* 'collapse_{in}' *kuzus(-u)* 'collapse_{tr}'

- (17) Labile

- a. *tozi(-ru)* 'close_{in}' *tozi(-ru)* 'close_{tr}'
 b. *mas(-u)* 'increase_{in}' *mas(-u)* 'increase_{tr}'

Of these, labile verb pairs are quite limited, with less than a dozen to be found in total.

As noted, many of those pairs consist of a subject-change verb and a subject-action/object-change verb in Kudo's classification. However, the match is not exact. Certain subject-action verbs in Kudo's classification that involve some change but do not yield a resultative reading with *-te iru* do participate in the alternation, as is true of *toor(-u)* 'pass through' and *nagare(-ru)* 'flow'. In addition, many result+means subject-action/object-change verbs do not participate in such an alternation, as noted above.

Some of these pairs are transitive/ditransitive pairs, such as *ki(-ru)* 'put (clothes) on one's own body' and *kise(-ru)* 'dress, put (clothes) on another's body', with the former representing a change in the subject, and the latter, a change in the dative object (Matsumoto 2000b, c). (Note that *ki(-ru)* is a subject-action/subject-change verb.) In some cases, the presence of change may not be clear in the transitive member, as is true of the pair *mi(-ru)* 'look at' and *mi-se(-ru)* 'show' in (14c). The verb *mi(-ru)* does not represent a clear change of state, and cannot be interpreted in a resultative sense in the *-te iru* form. However, looking at something involves the gaining of visual information on the part of the subject, and thus the verb involves some sort of change on the part of the subject.

Languages are known to be skewed in terms of their preference toward noncausative- or causative-basic patterns, with Japanese manifesting a slight preference toward the noncausative-basic pattern (Narrog 2007a, b; Matsumoto 2016). This tendency is in keeping with what we will see in Section 3, that a more prominent role is played by noncausative subject-change verbs in Japanese than in other languages.

2.2 Semantic correlates to morphological markedness

There are several issues concerning such pairs that have attracted the attention of semanticists. One is the semantic correlation of the morphological markedness. Morphological markedness in these pairs appears to be at least partially semantically motivated (Jacobsen 1992, 2016; Matsumoto 2016). Jacobsen (1992: 75) argues that many of the noncausative-basic pairs express "changes normally seen to occur either spontaneously or as being brought about by [the referent of the subject] in itself." Causative-basic pairs, on the other hand, involve "changes normally seen to occur under the influence of an outside agent." Matsumoto (2016) examines all currently used verb pairs and argues that there are two independent semantic motivations for selecting one as basic. This study found that processes necessarily requiring an external cause are typically causative-basic, as Jacobsen has claimed. These include changes requiring a strong external force (e.g. *war(-u)* 'break' and *kir(-u)* 'cut') and changes which are necessarily brought about by human beings, involving the use of tools (e.g. *tog(-u)* 'sharpen'), human body parts (e.g. *um(-u)* 'bear (a child)'), carefulness, effort, or planning (e.g. *matome(-ru)* 'put together'), human perception or cog-

nition (e.g. *tok(-u)* ‘solve’), or social rules (e.g. *ur(-u)* ‘sell’). In contrast, changes that occur naturally, arising due to factors such as atmospheric change (e.g. *kawak(-u)* ‘get dry’), gravity (e.g. *oti(-ru)* ‘fall’), or the normal functioning of organisms (e.g. *sodat(-u)* ‘grow’), etc. tend to be noncausative-basic. However, this study also found that there are some phenomena that cannot be accounted for by this factor alone. Those involving psychological and bodily changes, for example, are typically non-causative-basic, even though they require an external cause (e.g. *odorok(-u)* ‘be surprised’). Matsumoto argues that these counterexamples and an abundance of other noncausative-basic pairs representing conditions of human beings or their body parts (e.g. *ne(-ru)* ‘go asleep’, *kuram(-u)* ‘get dizzy’) suggest the relevance of the factor of the humanness of an undergoer (Nichols et al. 2004). That is, changes with human/animate undergoers tend to be noncausative-basic. This tendency is consistent with the widely-noted preference among Japanese verbs to take a human subject (cf. Chamberlain’s (1890) observation that it is not possible to say in Japanese *The heat makes me feel languid*). Note that Japanese psych-verbs are generally noncausative-basic, taking an experiencer subject, with the corresponding causative verb derived and very resistant to being used with an inanimate subject (see Ikegami 1981, 1991; Bando and Matsumura 2001; Taniguchi 2005), as illustrated in (18).⁵

- (18) a. *Taroo ga sono nyuusu ni odoroi-ta.*
 Taro NOM that news DAT be.surprised-PST
 ‘Taro was surprised at that news.’
- b. *{Hanako/?Sono nyuusu} ga Taroo o odorok-asi-ta.*
 Hanako/that news NOM Taro ACC be.surprised-CA-PST
 ‘{Hanako/That news} surprised Taro.’

In a separate line of research, Narrog, Pardeshi and Akasegawa (2015) found that in the majority of such pairs, the morphologically less complex verb occurs more frequently than its more complex counterpart (see also Haspelmath et al. 2014). Such a difference in frequency may well be a reflection of the way those processes of change “normally” occur.

⁵ *Hanako* in (18b) is more likely to be interpreted as an agent than a mere cause. The diversity of linguistic coding observed for psychological phenomena reflects the ambiguous nature of such phenomena, occurring as they do in response to outer stimuli, while at the same time involving some mental action directed toward the stimuli (Croft 2012). In Croft’s (2012: 233) terms, they involve a “bi-directional transmission of force in mental events.”

3 Semantics of noncausative/subject-change verbs

We turn next to a consideration of noncausative, subject-change verbs, most of which are intransitive. It has been observed that Japanese makes wider use of noncausative subject-change verbs, often describing situations that, crosslinguistically considered, are not commonly expressed by such verbs (e.g. Teramura 1984; Ikegami 1981, 1991; Luk 2014). Several aspects of the semantic behavior of these verbs are remarkable in this respect, of which we will take up two: the existence of subject-change verbs implying an external causer, and the use of subject-change verbs to represent fictive change.

3.1 Subject-change verbs that imply the presence of an external causer

One unusual feature of intransitive subject-change verbs in Japanese is that they are sometimes possible even for processes in which the existence of an external causer is implied. As examples of this, Jacobsen (1992) cites sentences like the following (Jacobsen 1992: 130).

- (19) a. *Keisatu ni tukam-at-ta.*
 police DAT catch-DA-PST
 ‘(He was) caught by the police’
- b. *Higaisya ga zimoto no hito ni mituk-at-ta.*
 victim NOM local GEN person DAT find-DA-PST
 ‘The victim was found by the local people.’

Further examples of such verbs are listed in (20).

- (20) *kim-ar(-u)* ‘become decided’, *mook-ar(-u)* ‘be earned’, *osow-ar(-u)* ‘learn’,
tasuk-ar(-u) ‘be saved/helped’, *mituk-ar(-u)* ‘become found’, *uw-ar(-u)* ‘be
 planted’, *tukam-ar(-u)* ‘be caught’, *tamaw-ar(-u)* ‘be granted’, *sir-e(-ru)*
 ‘become known’, *ur-e(-ru)* ‘be sold’.

The existence of such verbs is in marked contrast to what has been argued for English verbs (e.g. Levin and Rappaport Hovav 1995), and for languages in general (Haspelmath 1993), although such verbs are commonly seen in South Asian languages (Pardeshi 2008).

It has been argued that such causer-implying subject-change verbs are possible only when derived from causative base verbs by means of a particular affix. Kageyama (1996) claims that decausativizing *-ar* and *-e* are associated with different semantic

operations on the semantic structure of their base causative verbs, utilizing a representation called lexical causative structure (LCS), similar to the one adopted in Levin and Rappaport Hovav (1995). In his framework, the affix *-ar* triggers what he calls “decausativization,” while the affix *-e* triggers “anticausativization.” Details of Kageyama’s representations are not of concern here (see Matsumoto 2000a for discussion), except to note that, in his treatment, an external causer argument distinct from the undergoer of change is present in the semantic structure of *-ar* verbs, even though it is not always mapped onto a surface syntactic argument, while such an argument is totally absent in the semantic structure of *-e* verbs.

As evidence for this, Kageyama points to differing patterns of compatibility with the adverbial phrase *katte-ni* ‘of one’s own accord’, taken as diagnostic of the absence of an external causer role. This adverb is allegedly compatible with *-e* verbs, but not with *-ar* verbs, as seen in (21).

- (21) a. *Totte ga katte-ni tor-e-ta.*
 knob NOM of.own.accord take.off-DA-PST
 ‘The door knob came off of its own accord.’
 b. **Katte-ni niwa ni ki ga uw-at-ta.*
 of.own.accord garden LOC tree NOM plant-DA-PST
 ‘The tree got planted in the garden of its own accord.’

However, the picture is not as clear as this analysis suggests (Matsumoto 2000a). Certainly there are some *-ar* verbs which necessarily entail the presence of an external causer. However, there are also many *-ar* verbs that do not necessarily involve an external causer and are able to occur with *katte-ni* (e.g. *ag-ar(-u)* ‘go up’, *atum-ar(-u)* ‘gather_{in}’, *hazim-ar(-u)* ‘begin_{in}’, *kaw-ar(-u)* ‘change_{in}’, *hirog-ar(-u)* ‘spread_{in}’, *ow-ar(-u)* ‘end_{in}’, *sim-ar(-u)* ‘close_{in}’, *tam-ar(-u)* ‘accumulate_{in}’, *tom-ar(-u)* ‘stop_{in}’). Also, there are certainly many *-e* verbs that represent a process that is clearly not instigated by an external agent, but alongside those there are some *-e* verbs that do represent a process necessarily caused by an external entity, not readily accepting modification by *katte-ni* (e.g. *sir-e(-ru)* ‘become known’, *ur-e(-ru)* ‘be sold’, *tok-e(-ru)* ‘be solved’, *yabur-e(-ru)* ‘get torn, defeated’, *mog-e(-ru)* ‘be plucked off’, *kosur-e(-ru)* ‘be rubbed, scraped’). These observations show that both affixes *-ar* and *-e* give rise to semantic structures that either imply or do not imply an external causer, although the number of causer-implying verbs may be larger in the case of *-ar* (Matsumoto 2016).

A clearer contrast between *-e* and *-ar* can be seen in the phonological environments in which they occur (Matsumoto 2000a, 2016). The affix *-e* can only be suffixed to transitive stems that end in a consonant or in the vowel /i/ (though the latter case is rare), whereas *-ar* is not restricted as to the stem of the base verb on which it occurs, although in the great majority of cases it is suffixed to causative base verbs whose

stems end in /e/ (which is dropped when suffixed), complementary in that environment to -e verbs. The choice between the two affixes is therefore largely phonological.

Japanese subject-change verbs thus cover a broad range of change events including changes that are brought about by an external causer, and this is not limited to verbs derived by means of a particular suffix.

The use of causer-implying intransitive predicates may in some cases be pragmatically motivated. Jacobsen (1992) argues that the choice of such a verb over its causative counterpart may be motivated by a desire to background or defocus an agent in discourse, typically when the speaker is culturally expected to downgrade his/her own role in the event reported, as in (22).

- (22) *Otya ga hair-imasi-ta.*
 tea NOM enter-POL-PST
 ‘Tea is ready.’ (referring to tea the speaker has prepared)

3.2 The use of subject-change verbs to express non-actual change or to describe states

Another use of subject-change verbs in Japanese illustrating the extraordinarily wide use made of such verbs in the language is that certain intransitive subject-change verbs can be used to express a “fictive” change, with no actual change occurring in the real world. An example can be seen in the verb *nar(-u)* ‘become’, a verb that normally describes the onset of a new state as the result of a change. This verb can be used even when the change in question occurs only in the mind of a person conceptualizing the situation, as in the following use noted by Sato (2005).

- (23) *Buraziru-kokuseki na node kare wa buraziruzin ni*
 Brazil-citizenship COP because he TOP Brazilian COP
nar-u.
 become-NPST
 ‘Given that he has Brazilian citizenship, (we can now see that) he is a Brazilian.’

Sato argues that the verb *nar(-u)* in (23) is based on an inferential calculation, by which a new state of the subject emerges in the mind of a person conceptualizing the situation.

Perhaps even more extraordinary are sentences such as (24), in which a current state is described as if having resulted from a hypothetical change, even if it is obvious that no such change actually took place (Matsumoto 1996b).

- (24) a. *Sono sikaku wa kado ga maruku nat-te i-ru.*
 that square TOP corner NOM round become-GER be-NPST
 ‘That square has rounded corners (lit., As for that square, its corners have become rounded).’
- b. *Sono hantoo wa umi ni tuki-de-te i-ru.*
 that peninsula NOM sea GOAL thrust-go.out-GER be-NPST
 ‘That peninsula juts out into the sea (lit., That peninsula is in the state of having jutted out into the sea.)’

Such expressions are said to be based on “resultative cognition” (Kunihiro 1985) or involving “subjective” or “fictive” change (Matsumoto 1996b), by which somewhat unusual states are felt to have occurred as a result of a change from a more normal state. Since perception of a visual kind is normally involved in these cases, such examples typically involve change-of-state verbs representing physical change of some kind.

Forming a grammatical background to such uses is the frequent use of change-of-state verbs to represent states based on processes that do actually occur. The resultative use of *-te iru* to express stative meaning in effect acts as a compensatory mechanism to fill the gap created by a poverty of lexically stative verbs in the language. Meanings corresponding to English stative verbs such as *know* and *sit*, for example, are expressed by the *-te iru* form of the change-of-state verbs *sir(-u)* ‘come to know’ and *suwar(-u)* ‘sit down’. The *-te iru* form is also used to represent a wide range of states that are in other languages expressed by adjectives. Compensating for the lack of adjectives such as ‘fat’ and ‘old (person)’, for example, there are the *-te iru* forms *hutot-te i(-ru)* (get.fat-GER be-NPST) ‘be fat’ and *tosi o tot-te i(-ru)* (year ACC take-GER be-NPST) ‘be old’.

4 Semantics of causative/object-change verbs

The nature of object-change causative verbs in Japanese has been the focus of extensive discussion in the literature (e.g. Shibatani 1973, 1976a, b; Ikegami 1985; Nishimura 1993; Kageyama 1996; Nishimitsu 2010; Matsumoto 2016, Hayatsu 2016, etc.). In the following subsections, we review some basic issues concerning the semantic analysis of these verbs.

4.1 Morphological vs. lexical causatives

The semantics of causative verbs in Japanese can be brought into relief through a comparison with another class of verbs with causative meaning, the latter distinguished from the former by the term lexical causative vs. morphological causative. These are

exemplified in (25) and (26), involving the lexical and morphological causative forms of *tat(-u)* ‘stand up’ and *ki(-ru)* ‘put (clothes) on (oneself)’ respectively.

- (25) a. *Hon o tat-e-ta.* (lexical causative)
 book ACC stand-CA-PST
 ‘(I) stood the book up.’
- b. *Seito o tat-ase-ta.* (morphological causative)
 student ACC stand-CAUS-PST
 ‘(I) made the students stand’
- (26) a. *Kodomo ni huku o ki-se-ta.* (lexical causative)
 child DAT clothes ACC put.on.oneself-CA-PST
 ‘(I) put clothes on the child.’
- b. *Kodomo ni huku o ki-sase-ta.* (morphological causative)
 child DAT clothes ACC put.on.oneself-CAUS-PST
 ‘(I) made the child put on clothes’

The verb *ki-se(-ru)* ‘put on another person’ is a causative version of *ki(-ru)* ‘put on oneself’ in the sense that a causer causes the dative object to undergo a change into the state of wearing clothes.

Morphological causatives contain a productive causative suffix *-(s)ase* which gives rise to a syntactic biclausal structure at some abstract level of syntactic representation, with *-(s)ase* heading the main clause and the base verb the embedded clause (see Shibatani 1973, 1976a; Inoue 1976; Matsumoto 1996a). Lexical causatives, which are our primary target of interest in this section, are related to the base verb by means of much less productive affixes, such as *-e* and *-as/-os* (Section 2), giving rise to a purely monoclausal structure. (These are called “lexical” since verbs with *-e* and *-as/-os* are not as transparently complex as those with *-(s)ase*, and their internal morphological structure is often disregarded in syntactic analyses.)

It has been argued that lexical causatives are more limited in the types of causation they can represent in comparison to morphological causatives (Shibatani 1976a, b). Of the various ways in which causation can occur, Shibatani (1976a, b) argues that the distinction between manipulative vs. directive causation is relevant to distinguishing the meanings of the two causative types. Manipulative causation is where a causer physically manipulates a causee in order to bring about the caused event, while in directive causation both causer and causee are volitional agents and the causer directs the causee to bring about the caused event. This distinction is also one referred to as direct vs. indirect causation.

Another type of causation that has been identified following the early work of Shibatani is a type intermediate between manipulative (direct) and directive (indirect) causation, referred to by Shibatani and Pardeshi (2002) as sociative causation.

There are three different subtypes of such causation: (a) joint-action, (b) assistive, and (c) supervisory, exemplified in turn by (a) a mother walking with a child holding the child's hand, (b) a mother helping a child to pee by holding the child, and (c) a mother supervising a child reading. Matsumoto (2016) furthermore posits an additional subtype of direct causation, causer-internal causation, in which the causer causes a change in his/her own body or body parts through neural networks internal to the body, as in bowing one's head and kneeling. The range of these causation types is summarized in (27).

- (27) Direct causation: causer-internal
 manipulative
 Sociative causation: joint-action
 assistive
 supervisory
 Indirect causation: directive

These are all forms of causation involving physical action. The causation of psychological change (e. g. surprising someone) and of natural processes (e. g. melting something) is done differently, the former by exerting influence in a way that involves no contact, and the latter either by exerting influence involving no contact or by withholding preventive action to stop occurrence of the change.

Shibatani (1976a, b) argues that lexical causatives typically express manipulative causation and particular kinds of directive causation that are executed by conventional or highly authoritative means (e. g. a policeman stopping a car, or a mother sending her children to bed), but that they cannot represent other kinds of directive causation. Lexical causatives can also represent causer-internal causation (Matsumoto 2016)⁶ and the different subtypes of sociative causation (Shibatani and Pardeshi 2002). These various meanings are exemplified in (28) with the verb *or-os(-u)* (go. down-CA-NPST) 'lower, bring down'.

- (28) a. causer-internal causation
 Taroo ga te o orosi-ta.
 Taro NOM hand ACC lower-PST
 'Taro lowered his hand.'
- b. manipulative causation
 Taroo ga tana kara hon o orosi-ta.
 Taro NOM shelf ABL book ACC lower-PST
 'Taro took the book down from the shelf.'

⁶ Causer-internal causation has often been treated as a case of reflexive verb use (Muraki 1991, Hayatsu 2016).

c. sociative (joint-action) causation

Taroo wa te o tot-te isu no ue no kodomo
 Taro TOP hand ACC take-GER chair GEN top COP child
o orosi-ta.
 ACC lower-PST

‘Taking his hand, Taro took down the child who was on the chair.’

d. directive (authoritative) causation

Taroo wa sizi o dasi-te inu o isu kara orosi-ta.
 Taro TOP order ACC issue-GER dog ACC chair ABL lower-PST
 ‘Taro ordered the dog down from the chair.’

e. directive (nonauthoritative) causation

**Taroo wa kare ni onegai si-te yane kara orosi-ta.*
 Taro TOP he DAT request do-GER roof ABL lower-PST
 ‘Taro asked him to get down from the roof.’

Morphological causatives (e.g. *ori-sase(-ru)* (go.down-CAUS-NPST) ‘cause to go down’), on the other hand, can represent non-authoritative, non-conventional directive causation like (28e). Shibatani states that morphological causatives may also express conventional or authoritative directive causation and manipulative causation in cases where there is no appropriate lexical causative available (see below for the case of *hak-ase(-ru)* ‘put.on.lower.body-CAUS-NPST’).

Differences can be seen in individual lexical verbs in the range of causation they can represent. *Or-os(-u)* covers a wide range, as seen above, but some are restricted to causer-internal causation (e.g. *kagam-e(-ru)* ‘bend (one’s own body)’), or to causer-internal and manipulative causation (e.g. *tat-e(-ru)* ‘stand_{tr}’) (see Matsumoto 2016). Such cases require a more detailed specification of the meaning components of causation than the generic “CAUSE” used in some semantic representations (e.g. Levin and Rappaport Hovav 1995, Kageyama 1996).

One complication in distinguishing between lexical and morphological causatives is the existence of certain *-(s)ase* causative verbs that syntactically and semantically behave as lexical causatives, often called lexical *-sase* causatives (Matsumoto 2000c), an example of which is given in (29).

- (29) *Hahaoya wa ningyoo ni kutusita o hak-ase-ta.*
 mother TOP doll DAT socks ACC put.on-CAUS-PST
 ‘The mother put socks on the doll’s feet.’

The base verb *hak(-u)* ‘put on one’s lower body’ refers to an action that results in the state of the actor having an item of clothing on his/her own lower body. The causative form *hak-ase(-ru)* in its lexical causative reading in (29) represents an action of the causer on an item of clothing with the result that the dative-marked entity has it on

his or her lower body. *Hak-ase-ru* can of course have a directive causative reading as well, but given the impossibility of an agentive interpretation of the *ni*-marked NP in (29), such an interpretation is ruled out in this example. This type of *-sase* causative is formed from transitive base verbs, such as *hak(-u)* ‘put ... on one’s own lower body’, *tabe(-ru)* ‘eat’, *nom(-u)* ‘drink’, *sir(-u)* ‘come to know’, *kik(-u)* ‘hear’, and *mot(-u)* ‘come to have’.⁷ These verbs all imply in a broad sense some change in the subject (note that eating, drinking, and hearing also result in some change of the state of the subject). Such *sase* verbs are a case of morphological causative forms covering lexical causative meanings in the absence of appropriate lexical causative forms. It is important to note that these verbs are syntactically different from usual morphological causatives in that they exhibit no syntactic evidence for biclausality (see Matsumoto 2000c), setting them apart as a class of predicates distinct from other morphological causatives.

4.2 Lexical causative affixes

Another issue often discussed concerns the semantics associated with the various affixes creating lexical causative verbs. Kageyama (1996) argues that differing causativizing affixes are associated with different semantic operations, just as he argues for differing decausativizing affixes (3.1). He claims, for example, that causativizing *-e* and *-as/-os* have distinct semantic structures, as follows.

- (30) a. *-e*: [x CONTROL [_{EVENT} ...]]
 b. *-as/-os*: [[_{EVENT} x ACT] CAUSE [_{EVENT} ...]]

However, the causative meanings of *-e* verbs and those of *-as/-os* verbs in fact vary considerably within each verb group, and a single representation for each of these such as in (30) does not apply uniformly to all verbs with the same affix. Instead, Matsumoto (2000a) argues that the semantic class (or conceptual domain) to which a verb belongs is a better predictor of its semantic structure. For example, causative psych verbs with *-as* such as *odorok-as(-u)* ‘surprise’ take an event subject, consistent with the structure in (30b), but this is true not just of psych verbs with *-as/-os* but also of causative psych verbs with *-e* (e.g. *kurusim-e(-ru)* ‘torture’). Physical causation verbs such as *ak-e(-ru)* ‘open’ do not take an event subject, consistent with (30), but physical change verbs with *-as/-os* likewise cannot take an event as subject (e.g. *megur-as(-u)* ‘surround, enclose’, *tob-as(-u)* ‘fly_{tr}’, *d-as(-u)* ‘take/put out’, *kog-as(-u)* ‘scorch’).

⁷ See also Suzuki (1972:287) for an early observation about the lexical nature of *sir-ase(-ru)* and *kik-ase(-ru)* (see also Hayatsu 2016).

There do, on the other hand, appear to be differences in the semantics of verbs derived with *-e* from those derived with *-as/-os*. In Section 4.1, I pointed out that causative verbs vary in the range of causative meanings they represent. Matsumoto (2016) argues that *-e* verbs tend to be more limited in this respect than *-as/-os* verbs. Some causative verbs are limited in their meaning to causer-internal causation (e.g. *kagam-e(-ru)* ‘bend (one’s own body)’), and such verbs are almost without exception *-e* verbs; those which are limited to either causer-internal or manipulative causation are also *-e* verbs (e.g. *tat-e(-ru)* ‘stand_{tr}’, *muk-e(-ru)* ‘turn_{tr}/point_{tr} toward’). No *-e* verbs can represent causation of the natural change kind.

In addition to such semantic differences, there are also different phonological constraints governing the suffixation of *-e* and *-as/-os*, just as we saw in the case of decausativizing suffixes. Matsumoto (2000a, 2016) points out that suffixation of causativizing *-e* is restricted to a base verb whose stem ends in a consonant or the vowel /i/ (i.e., base verbs whose stems do not end in /e/), while that of causativizing *-as* is not so conditioned. Either *-e* or *-as/-os* can therefore be suffixed to base verbs with stems ending in a consonant, the choice partially depending on the particular final consonant (Matsumoto 2016). Those ending in /r/, for example, take *-as* (e.g. *her-as(-u)* ‘decrease_{tr}’), while those ending in /m/ predominantly take *-e* (e.g. *tizim-e(-ru)* ‘shrink_{tr}’).

4.3 Non-entailment of result with causative verbs

A number of studies have pointed out that not all Japanese causative verbs necessarily entail the result intended by the agent of the action in question (Ikegami 1981, 1985; Miyajima 1985; Kageyama 1996; Tsujimura 2003; Sato 2005), lacking one of the crosslinguistically prototypical feature of transitive verbs. English causative verbs exhibit the behavior typical of accomplishment verbs in that they entail the result in question, as seen in (31).

- (31) *I boiled the water, but it did not boil.

But such is not the case with many Japanese causative verbs, as observed by Ikegami (1981, 1985), citing examples such as (32).

- (32) *Sono mizu o wakasi-ta kedo wak-ana-katta.*
 that water ACC boil_{tr}-PST but boil_{in}-NEG-PST
 ‘I boiled the water, but it didn’t boil.’

This phenomenon is often treated as a case of “nonculminating accomplishment” (Bar-el, Davis and Matthewson 2005) or event cancellation (Tsujimura 2003). Ikegami argues that Japanese tends to focus on the action part of the meanings of these verbs,

in contrast to English, which focuses on achievement of the intended goal.⁸ He views this as a tendency of Japanese transitive verbs to have a weaker degree of directedness toward the patient. Such cancellation of result is by no means unique to Japanese, but is found among causative verbs in multiple languages (see Talmy 1991; Bar-el, Davis and Matthewson 2005, etc.).

Tsujimura (2003) applies some tests for telicity to sentences such as these, including co-occurrence patterns with telic and nontelic temporal phrases, with results such as the following.

- (33) a. *Boku wa otiba o {itizikan/itizikan-de} moyasi-ta.*
 I TOP fallen.leaves ACC for.an.hour/in.an.hour burn_{tr}-PST
 'I burned the fallen leaves {for/in} an hour.'
- b. *Otiba o {itizikan/*itizikan-de} moyasi-ta kedo*
 fallen.leaves ACC for.an.hour/in.an.hour burn_{tr}-PST but
moe-na-katta.
 burn_{in}-NEG-PST
 'I burned the fallen leaves {for/*in} an hour, but they didn't burn.'

The verb *moy-as(-u)* allows either a telic or atelic reading, as in (33a), but when the result is canceled, as in (33b), only the atelic reading is possible. Tsujimura argues that causative verbs such as this are in fact underspecified for telicity, and that the telic reading of an example such as (33a), where the result in question is realized, is due to a conversational implicature. On the basis of these observations, she calls into question the validity of simple LCS representations like [x CAUSE [y BECOME BURN_T]] as a representation of the semantic structure of such verbs.

Nishimura (1998) makes the interesting observation that the result cannot be canceled when the subject of such a sentence is a nonvolitional entity, as in (34a). Nor is it available when a nonintentional reading is imposed on the causation by means of an adverb, as in (34b) (Sato 2005).

- (34) a. **Kaze ga doa o ake-ta kedo ak-ana-katta.*
 wind NOM door ACC open_{tr}-PST but open_{in}-NEG-PST
 'The wind opened the door but it didn't open.'
- b. **Matigatte zyuutan o moyasi-ta kedo mo(y)e-na-katta.*
 by.mistake carpet ACC burn_{tr}-PST but burn_{in}-NEG-PST
 'I burned the carpet by mistake, but it didn't burn.'

⁸ Ikegami's observations are not restricted to causative verbs that have noncausative counterparts; verbs like *damas(-u)* 'deceive, cheat', which have no noncausative counterparts, are also capable of a reading where the intended result is not realized.

If achievement of the result intended is a conversational implicature, the result should be cancellable in such cases as well. The unacceptability of (34b) suggests that the implicature account is untenable and that an alternative account is necessary.

The behavior of causative sentences with nonvolitional subjects suggests that what is at issue in sentences such as (32) is that the result is an *intended* one. One way to capture the semantics of such causative verbs is to say that the result in question can be either an intended one or an actual one, preferably both. This does not require treating such verbs as polysemous in meaning, but as having a single prototypical meaning with disjunctive conditions. The unmarked or prototypical case is where both conditions are satisfied, but contexts can force the cancellation of one or the other condition. The acceptability of sentences like (32) varies among speakers, and, furthermore, judgments are not black or white even for individual speakers, suggesting that an appeal to a semantic prototype is indeed appropriate for such cases.

The question may arise as to whether verbs exhibiting nonentailment of result are the same in semantic character as verbs like *huk(-u)* ‘wipe’ and *kazir(-u)* ‘bite’, which do not entail a result but only suggest one. There is, however, a clear difference between these two kinds of verbs. Unlike the result-cancelling verbs, those verbs that only imply a change do not entail a change even with a nonintentional event, as shown in (34).

- (35) a. *Matigatte medaru o kazit-ta kedo ato ga nokor-ana-katta.*
by.mistake medal ACC bit-PST but trace NOM remain-NEG-PST
‘I bit the medal by mistake but no trace was left.’
- b. *Matigatte teeburu o hui-ta kedo kiree-ni wa*
by.mistake table ACC wipe-PST but clean CNT
nar-ana-katta.
become-NEG-PST
‘I wiped the table by mistake but it didn’t get clean.’

4.4. Nonintentional causative sentences

A prototypical transitive event involves a volitional causer acting directly on an object to produce an immediate physical change (see Hopper and Thompson 1980). However, Japanese transitive verbs allow certain deviations from this prototype in ways different from other languages (Jacobsen 1992, 2016; Nishimura 1993; Kageyama 2002; Amano 2002; Taniguchi 2005; Nishimitsu 2010). The transitive sentences in (36), for example, involve experiencer-like subjects, and those in (37), location and source subjects.

- (36) a. *Taroo ga asi o ot-ta.*
 Taro NOM leg ACC break_{tr}-PST
 ‘Taro broke his leg.’
- b. *Kare wa kuusyuu de ie o yai-ta.*
 he TOP air.raid INS house ACC burn_{tr}-PST
 ‘He had his house burnt down in an air raid.’
- (37) a. *Torakku ga hikkosi-nimotu o tun-de i-ru.*
 truck NOM moving-package ACC load-GER be-NPST
 ‘The truck has the packages to be moved loaded on it.’
- b. *Kaoku ga honoo o age-ta.*
 building NOM flame ACC raise-PST
 ‘The building emitted flames of fire.’

Sentences like (36) have attracted much attention and have been accounted for in different ways. Some argue that even in causative constructions such as these, the subject is seen as being “responsible” for the event described, and therefore implicitly has control over it in some sense (Ikegami 1982, 1988; Nishimura 1993; Nishimitsu 2010). According to Ikegami, the subject in sentences like (36a) bears responsibility for the event in that s/he should have been in control over occurrence of the event and could have prevented it from occurring but did not. Nishimitsu (2010) argues that even in sentences like (36b) the object is under the control of the subject, who therefore bears responsibility for the event in question. This becomes clearer when sentences in (36) are contrasted with their intransitive counterparts (e. g., *Kuusyuu de ie ga yake-ta* ‘The house burned down in an air raid’), where no such sense of responsibility is implied (Yoshinari, Pardeshi and Chung 2010). Others find it difficult to account for examples like (36b) in this way. Amano (2002) observes that the subject and object in the sentences in (36) (as well as those in (37)) exist in a whole-part relationship and argues that the subject functions as the “possessor” of the situation represented. In any case, an account of the use of causative verbs in (36-37) requires more than mere reference to a schematic representation of the lexical meanings of the verbs used.

5 Conclusions

This chapter has reviewed some basic issues in the verb semantics of Japanese, with special attention to general properties of major verb classes in the language. Our discussion has confirmed that one important typological property of the language is the broad utility of noncausative subject-change verbs, which are more often morphologically unmarked than their causative counterparts. Noncausative subject-change

verbs are used to describe a wide range of situations, even events implying an external causer and situations in which no actual change is involved (Section 3). In contrast, causative, object-change verbs are more often morphologically marked, and they often do not exhibit prototypical causative semantics (Section 4.3).

The present chapter also points to the kinds of semantic representations necessary to account for the behavior of various classes of verbs. In order to account for the differing behavior of verbs in those classes it is often necessary to make reference to a broader range of meanings than is possible with the schematic kind of semantic structures typically assumed in the literature. We saw this to be the case with the interpretation of *-te iru* (Section 1), the range of verbs that can be used in resultative constructions (Section 1), the semantic range of causative meanings associated with various affixes (Section 4), and the prototype structure characterizing the semantics of nonentailment verbs (Section 4). Our examination of the behavior of Japanese verbs across this broad range of phenomena underlines the need for recognizing semantic structures that incorporate a richer variety of information than provided by the schematic semantic representations of the past and of the need for continuing research to make possible a deeper and more elaborate understanding of the nature of such semantic structures.⁹

⁹ Verb semantics is a broad topic and there are numerous other interesting areas of study not treated in this chapter. For these topics, I refer the reader to the works cited below. Issues of semantics and grammar have been discussed in relation to specific syntactic constructions such as the benefactive construction (Shibatani 1996; Yamada 2004; Sawada 2014), and the resultative construction (Washio 1997; N. Ono (ed.) 2007, 2009; Murao 2007). Another line of grammar-related semantic research has been that centered around the issue of unaccusativity (e. g. Tsujimura 1991; Kageyama 1993; Kishimoto 1996; Matsumoto 1998a; Kuno and Takami 2004). As for the study of verbs in specific semantic domains, the semantics of motion verbs has been the object of much research (see Matsumoto 2018 for a summary). Much attention has also been given to deictic verbs, which in the case of Japanese include not only verbs of coming and going (Ohye 1980; Sawada 2016; Matsumoto et al. 2017), but also verbs of giving (Kuno 1986; Sawada 2014). Such verbs are often discussed in relation to the general issue of subjectivity (Uehara 2006). V-V compound verbs also pose many interesting semantic questions (Kageyama 1993, 2013; Matsumoto 1996a, 1998a; Himeno 1999; Yumoto 2005; Chen and Matsumoto 2018), as do Sino-Japanese complex verbs (Kobayashi 2004). The semantics of mimetic verbs has recently gained a position in the spotlight as a topic of semantic research (Kageyama 2007; Tsujimura 2014; Akita 2017). For the semantics of verbal idioms, see Miyaji (1982) and Momiyama (1997). See Miyajima (1972) for indepth semantic analyses of verbal near synonyms. Semantic extension and polysemy in verbs are another area that has been extensively studied (e. g. Tanaka 1996; Momiyama 1999; Sumi 2002; Kunihiro 2006; Moriyama 2012) often in relation to issues of conceptual metaphor and metonymy (e. g. Seto 1997; Nishimura 2002; Matsumoto 2007; Nabeshima 2011). A special case of such extension is deverbalization of verb meaning into more grammatical and/or schematic meanings (Takahashi 1994; Matsumoto 1998b; T. Ono 1992; K. Ono 2000; Kanasugi, Oka and Yonekura 2013).

Additional abbreviations

CA – causativizing affix, CNT – contrastive, DA – decausativizing affix, GOAL – goal, in – intransitive, NPST – nonpast, tr – transitive

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2 The semantics of nouns

1 Introduction

In order to adequately describe the semantics of nouns or noun phrases (NPs) in Japanese, it is necessary to approach their meaning from two distinct perspectives. One is the perspective of their inherent meaning, a meaning that is constant and independent of their occurrence across sentences of various types. The other is the perspective of the semantic function that they perform within the context of a sentence. In order to understand the distinction in what we can expect to see from those two perspectives, let us consider first the following example from English:

- (1) a. *The tallest girl in the class is an American, isn't it/she?*
b. *The tallest girl in the class is Mary, isn't it/*she?*

The same NP, *the tallest girl in the class* appears both in (1a) and (1b). The linguistically encoded meaning of this NP is unambiguously clear and unvarying in its occurrence in either (1a) or (1b). The first perspective above is concerned with (i) what meaning this NP linguistically encodes, (ii) how the lexical meanings of *the*, *tallest*, *girl*, *in*, *the*, and *class* come to form the meaning of *the tallest girl in the class*, and (iii) what kind of semantic properties or relations this NP has within a general semantic theory.

At the same time, however, this NP, *the tallest girl in the class* performs different semantic functions in (1a) and (1b). The semantic function of *the tallest girl in the class* in (1a) is that of a referential NP that points to a particular individual in the world, whereas the semantic function of the same NP in (1b) is not that of a referential NP but that of a variable NP in the sense that it contains a variable in its semantic structure. Such a distinction is supported by the fact that the subject NP in (1a) can act as the antecedent of a personal pronoun such as *she* in sentence-final “tags,” whereas the subject NP in (1b) cannot. In fact, (1a) is a predication copular sentence where the predicate NP *an American* expresses a property ascribed to the referent of the subject NP, whereas (1b) is an inverted specificational sentence where the predicate NP *Mary* specifies a value for the variable expressed by the subject NP.¹ Thus, the second per-

¹ Sentences such as (1b) are called ‘specificational sentences’ by Higgins (1979) and Declerck (1988). However, Moro (1997), among others, argues that (i) should be considered an inverted form derived from a basic specificational sentence such as (ii).

(i) The tallest girl in the class is Mary.

(ii) Mary is the tallest girl in the class.

Here, we follow Moro’s (1997) terminology without argument.

spective on the semantics of the NP *the tallest girl in the class* is concerned with what kind of semantic functions this NP performs when it is used in different sentential contexts such as (1a) and (1b).

In order to further clarify the essential distinction between the inherent meaning of nouns or NPs and their semantic functions in a sentence, consider the following:

(2) *His first proposal was a joke.* (Huddleston and Pullum 2002: 266)

(2) has two NPs, *his first proposal* and *a joke*. The meaning of each of these NPs is not ambiguous. However, (2) is ambiguous between a predication reading and an inverted specificational reading.² On the predication reading, (2) is a comment about a particular proposal: *a joke* gives an evaluation of *his first proposal*, saying that it was laughable. Note that the semantic function of *his first proposal* is that of a referential NP and that *a joke* is a property NP that denotes a property. Interpreted as an inverted specificational reading on the other hand, (2) can be understood as an answer to question (3).

(3) *What was his first proposal?*

This reading can be represented as “The *x* such that *x* was his first proposal was a joke.” Under this interpretation of (2), the semantic function of *his first proposal* is that of a variable NP and the semantic function of *a joke*, that of a value NP that specifies a value for the variable. If we invert the two NPs, this is the only reading available.

(4) *A joke was his first proposal.*

This shows that, while the inherent meaning remains constant, the subject NP *his first proposal* in (2) has differing semantic functions, either as a referential NP or as a variable NP, depending on whether the sentence is given a predication reading or an inverted specificational reading. The predicate NP *a joke* in (2) likewise has differing semantic functions, either as a property NP or a value NP, depending on whether the sentence receives a predication reading or an inverted specificational reading, again with the inherent meaning of the NP *a joke* remaining constant in the two cases. Thus, semantic functions of an NP such as referential NP, variable NP, property NP, and value NP must be distinguished independently of the inherent meaning of the NP.

Previous studies of the semantics of nouns or NPs in Japanese have paid little attention to the second perspective, focusing principally on semantic facts concerning NPs from the first perspective. However, an adequate explanation of linguistic facts

² Huddleston and Pullum (2002: 266) use the terms “ascriptive reading and specifying reading,” instead of “predication reading and inverted specificational reading.”

involving NPs requires attention to both the perspective of their inherent meaning and the perspective of their semantic functions in a sentence. In the present chapter, we will first consider semantic facts from each of these two perspectives separately, and will then proceed to argue that the semantic structures of various constructions can only be adequately accounted for when both perspectives are taken into consideration.

The present chapter is organized as follows. Section 2 briefly reviews previous approaches to the inherent meaning of modifier-head noun constructions. In particular we are concerned with both simple noun modification such as in the “NP₁ *no* NP₂” construction (roughly NP₁’s NP₂, or NP₂ of NP₁ in English), and clausal noun modification. We will show that a certain type of clausal noun modification, that called in Japanese *soto no kankei* ‘outer relationship’, can be reconstructed as the relationship between an “unsaturated” noun and its parameter. Section 3 discusses various semantic functions that nouns or NPs perform in a sentence. We pay special attention to copular sentences because the various semantic functions of NPs can be most clearly observed in such sentences. The distinction between predicational and specificational readings of copular sentences will be crucial to our discussion. We will further argue that the distinction between referential NP and variable NP is relevant not only to the semantic structure of copular sentences, but also to the semantic structure of *change*-sentences and existential sentences. In Section 4, we discuss the significance of the interaction between semantic facts concerning NPs observed from each of these perspectives. We argue that the semantic structure of possessive constructions and double subject copular constructions such as “A *wa* B *ga* C (*da*)” can only be accounted for if we consider semantic facts concerning NPs seen from both perspectives and that new light is shed on the semantic structure of such constructions by adopting this approach. Section 5 concludes this chapter.

2 Noun modification

This section discusses the inherent meaning of nouns and NPs independent of their occurrence in sentences. To set the stage for this, we briefly review previous approaches to the meaning of modifier-head noun constructions, in particular that of two types: simple noun modification and clausal noun modification.

2.1 Simple noun modification: [NP₁ + GEN + NP₂]

There are various ways of modifying nouns in Japanese. A noun modifier can be an adjective, an adjectival noun, an adnominal adjective, a deictic expression, or one of a number of other categories combined with the genitive particle *no*. Here, we focus

on $[NP_1 + \text{GEN} + NP_2]$, a construction that is well known to be semantically ambiguous in at least the following ways (Nishiyama 2003: 6-58, Nishikawa 2013c).

- (5) a. Type A: NP_1 has some pragmatic relationship R with NP_2
Taroo no kuruma
 Taro GEN car
 ‘Taro’s car’
- b. Type B: NP_1 expresses a property of NP_2
byooki no zyookyaku
 sickness GEN passenger
 ‘a sick passenger’
- c. Type C: NP_1 expresses a particular time in the lifespan of NP_2
ano toki no Taroo
 that time GEN Taro
 ‘Taro at that time’
- d. Type D: NP_2 is an unsaturated Noun and NP_1 is its parameter.
kono hon no tyosya
 this book GEN author
 ‘the author of this book’
- e. Type E: NP_2 is a verbal noun and NP_1 is its argument.
Tanaka no tootyaku
 Tanaka GEN arrival
 ‘Tanaka’s arrival’
- f. Type F: NP_2 is an inalienable noun and NP_1 is its base expression.
Taroo no asi
 Taro GEN leg
 ‘Taro’s leg’

Among these six types of the $[NP_1 + \text{GEN} + NP_2]$ construction, it should be noted that Type A is special in that the exact relationship between NP_1 and NP_2 is not semantically determined, but rather contextually determined through a pragmatic process called “saturation.” There is in fact more than one interpretation available for *Taroo no kuruma* ‘Taro’s car,’ including (i) a car that Taro owns, (ii) a car that Taro is driving now, (iii) a car that Taro designed, (iv) a car that Taro is supposed to wash, (v) a car that Taro has stolen, and so on. Thus, R in (6) is a free variable, whose value is contextually supplied.

- (6) NP_1 has some pragmatic relationship R with NP_2

In each of the other types of the $[NP_1 + \text{GEN} + NP_2]$ construction, by contrast, the exact relationship between NP_1 and NP_2 is semantically determined without recourse to context. For instance, NP_1 of type B is a predicate nominal expressing a property of NP_2 so that, *byooki no zyookyaku* ‘a sick passenger’ has a semantically close relationship with (7), a predication copular sentence.

- (7) *Sono zyookyaku wa byooki da.*
 that passenger TOP sick COP.NPST
 ‘That passenger is sick.’

Another example of Type B is shown in (8).

- (8) *Hokkaidoo-syussin no sakka*
 Hokkaido-native GEN writer
 ‘a writer who is a native of Hokkaido’

The modifier *Hokkaidoo-syussin* ‘Hokkaido-native’ is, in other words, a predicate nominal expressing a property of *sakka* ‘writer’.

Turning to type C, the NP_1 here plays the semantic role of an adverb. Thus, (9a) can be paraphrased as (9b).

- (9) a. *Ano toki no Taroo wa kintyoo-si-tei-ta.*
 that time GEN Taro TOP become.nervous-do-RES-PST
 ‘Taro at that time was very nervous.’
 b. *Ano toki Taroo wa kintyoo-si-tei-ta.*
 that time Taro TOP become.nervous-do-RES-PST
 ‘At that time, Taro was very nervous.’

The relationship between NP_2 and NP_1 in the case of type D is the semantic relationship between an unsaturated noun and its parameter. Consider the examples in (10).

- (10) a. Saturated Nouns: *gaka* ‘painter’, *sakka* ‘(professional) writer, novelist’,
 haiyuu ‘actor’, *inu* ‘dog’, *kuruma* ‘car’, *ringo* ‘apple’
 b. Unsaturated Nouns: (X no) *teki* ‘the enemy (of X)’, (X no) *haha* ‘(X’s)
 mother’, (X no) *sakusya* ‘the author (of X)’,
 (X no) *kokyoo* ‘(X’s) hometown’

The nouns in (10a) are semantically complete in their own right and their extension – the set of things that each noun can refer to – is determined autonomously. Accordingly, the set of *gaka* ‘painters,’ and so forth for the other nouns in (10a), can be established with no previous context. Nishiyama (2003) calls such nouns “saturated” nouns.

The nouns in (10b) are different. The meaning expressed by *teki* ‘enemy,’ for example, includes a variable X, as in (*X no*) *teki* ‘the enemy (of X),’ so that the extension of *teki* ‘enemy’ cannot be determined without filling in a value for the variable X. That is, as long as the *dare no* ‘whose’ of *dare no teki* ‘whose enemy’ is left unspecified, it is fundamentally impossible to determine whether or not a particular individual belongs to the set of individuals to whom the term *teki* ‘enemy’ applies, something that is possible only when X is supplied from the context. The same is true of the other nouns in (10b), which Nishiyama (2003) called “unsaturated” nouns. In semantic terms, the two types are distinguished by the fact that saturated nouns do not include a variable in their meaning, whereas unsaturated nouns do include such a variable, something referred to in Nishiyama (2003) as a “parameter.” Unsaturated nouns, in other words, are nouns that obligatorily require a complement to their meaning. Note that unsaturated nouns overlap with but should not be equated with “relational” nouns such as *imooto* ‘younger sister,’ *haha* ‘mother,’ *senpai* ‘senior,’ *zyoosi* ‘boss,’ *yatoinusi* ‘employer,’ and so on. Indeed, most relational nouns are also unsaturated nouns, but so are many non-relational nouns such as *syatyoo* ‘company president,’ *syain* ‘company employee,’ *gityoo* ‘chairperson,’ *syuyaku* ‘leading actor,’ *kokyoo* ‘hometown,’ *hitudokusyo* ‘required reading,’ *koobutu* ‘favorite food,’ *ketten* ‘deficiency,’ *honba* ‘the main center for,’ *kuse* ‘habit,’ and so on.

It is worth noting that an extensionalist semantic framework cannot account for the meaning of sentences with unsaturated nouns. Within the framework of extensionalist semantics, the compositional meaning of a modifier-head noun construction is a simple set-theoretic conjunctive function of the extension of the modifier and the extension of the head noun. Thus, the extension of the whole modifier-head noun construction is the intersection of the extension of the modifier and the extension of the head noun. For instance, the extension of the phrase (8), which is a type B [$NP_1 + \text{GEN} + NP_2$] construction, is the set of objects that are both *Hokkaidoo-syussin* ‘Hokkaido-native’ and *sakka* ‘writer’. What then is the extension of the phrase (11), which is a type D [$NP_1 + \text{GEN} + NP_2$] construction? Is it the set of objects that are both *korerano syoosetu* ‘these novels’ and *sakusya* ‘author’?

- (11) *korera no syoosetu no sakusya*
 these GEN novels GEN author
 ‘the author of these novels’

Since *sakusya* ‘author’ is an unsaturated noun, the extension of *sakusya* ‘author’ cannot be determined. Therefore, it is impossible to determine the intersection of the extension of the modifier *korerano syoosetu* ‘these novels’ and the extension of the head noun *sakusya* ‘author’. These facts suggest that an extensional semantics that relies solely on set theory cannot explain the meaning of (11).

In the case of Type E, NP_2 is an instance of the class of “verbal nouns.” Verbal nouns are commonly seen as deriving from their corresponding verb, so that a verbal

noun takes an argument just as does its corresponding verb, and in fact inherits its argument structure from that verb. In the case of Type E [NP_1 GEN NP_2] constructions, therefore, NP_1 functions as an argument of NP_2 just as it is an argument of the verb from which NP_2 is derived. For instance, *tootyaku* ‘arrival’ has an argument structure inherited from its base verb *tootyaku-suru* ‘arrive’ and thus *Tanaka* (NP_1) in *Tanaka no tootyaku* functions as an argument of *tootyaku* (NP_2). Some verbal nouns such as *kyooiku* ‘education,’ *kenkyuu* ‘research,’ and *hihan* ‘criticism’ take more than one argument, with the result that expressions such as (12) are ambiguous, as reflected in the English translation.

- (12) *hahaoya no kyooiku*
 mother GEN education
 ‘mother’s education of someone’
 ‘someone’s education of mothers’

Finally, note that in addition to unsaturated nouns, there is another type of noun that is not semantically interpretable in isolation, the type called “inalienable noun.” (5f) illustrates this type of noun, where *asi* ‘leg’ is in an inalienable relation to *Taroo* in that it cannot be defined without reference to the concept of the BODY of the individual Taro. Type F, of which this is an example, however, covers not only body-to-part relations but whole-to-part relations in general, as illustrated in (13).

- (13) a. *nabe no {huta/totte/soko}*
 pan GEN {lid/knob/bottom}
 ‘the lid/knob/ bottom of the pan’
 b. *heya no {mado/tenzyoo/kabe/doa}*
 room GEN {window/ceiling/wall/door}
 ‘the window/ceiling/wall/door of the room’

In these examples, the relation can be considered to be inalienable in the sense that NP_1 is a linguistic realization of the base concept that is a prerequisite for the meaning of NP_2 . Note that the inalienable relationship even covers some examples that, strictly speaking, may not exemplify the whole-to-part relationship at all, such as the examples in (14).³

- (14) a. *Hanako no koe*
 Hanako GEN voice
 ‘Hanako’s voice’

³ See Nishikawa (2013c: 66).

- b. *ki no kage*
 tree GEN shadow
 ‘shadow of a tree’

Here, NP₂ can be considered to be a product or creation of NP₁, where the existence of NP₁ is essential for the existence of NP₂. In this sense, the entities in question can be considered to be in a kind of inalienable relationship.

Note that the [NP₁+ GEN + NP₂] construction in examples like (15) is ambiguous between a type A and type F reading.⁴

- (15) *Taroo no te*
 Taro GEN hand
 ‘Taro’s hand’

If (15) is interpreted in the sense of ‘Taro’s hand as a part of his body,’ then this [NP₁+ GEN + NP₂] construction expresses inalienable possession of the type F. However, other interpretations are possible, depending on the context. As an example, suppose Taro is playing a game in which players who are blindfolded grab someone else’s hand and must then guess who has grabbed whose hand. In such a context, *Taroo no te* ‘Taro’s hand’ could be interpreted as ‘the hand that Taro has grabbed’, where *Taroo* and *te* would be in a relationship of alienable possession of type A. However, this does not entail that the word *te* ‘hand’ has two meanings or uses, one alienable and one inalienable. Lexically, *te* ‘hand’ has only the meaning of an inalienable hand, because even where *Taroo no te* ‘Taro’s hand’ is interpreted in the sense of type A, *te* ‘hand’ must be in an inalienable relationship with someone’s body, even if not Taro’s.

Finally, note that inalienable nouns should not be confused with unsaturated nouns. In the case of an unsaturated noun like *tuma* ‘wife’, it would be nonsense to ask the following:

- (16) *?Kono tuma wa dare-no tuma des-u ka?*
 this wife TOP whose wife COP.POL-NPST Q
 (lit.) ‘Whose wife is this wife?’

In order to use *kono tuma* ‘this wife’, the parameter of *tuma* must be clear from the context. Since (16) asks for the value of a presumably known parameter, it sounds odd, in contrast to the naturalness of (17).

- (17) *Kono te wa dare-no te des-u ka?*
 this hand TOP whose hand COP.POL-NPST Q
 ‘Whose hand is this hand?’

⁴ See Chomsky (1972: 37–38) for a similar observation.

It is possible to refer to *te* without knowing who it belongs to, showing that the inalienable noun *te* is a saturated noun. We shall come back to the question of the distinction between unsaturated and inalienable nouns in Section 4.3.

This subsection has presented examples of the $[NP_1 + \text{GEN} + NP_2]$ construction. Although the Japanese genitive particle *no* exhibits a wide variety of relations between the two nouns in “ NP_1 *no* NP_2 ,” there are clear semantic constraints distinguishing these. We have seen that not only is type A semantically distinguished in the most basic way from the other types B, C, D, E, and F, but B, C, D, E, and F are semantically strictly distinguished from each other as well.

2.2. Clausal noun modification

In this subsection, we discuss the case of nouns modified by a sentence in a construction commonly called “clausal noun modification.” Teramura (1992) argues that there are two types of clausal noun modification in Japanese. One is the case in which the modified head NP bears a clear case relationship to the predicate of the clause modifying it and fills a gap internal to that clause, a relationship Teramura labels as *uti no kankei* ‘inner relationship’. This is generally understood to exemplify the type of relative clause construction standardly seen across languages, examples of which are as follows.

- (18) a. *sanma o yak-u otoko*
 saury ACC grill-NPST man
 ‘a man who grills saury (a kind of fish)’

- b. $[_s t_i \text{ ga } \textit{sanma o yaku}] \textit{otoko}_i$

- (19) a. *Taroo ga tabe-ta ringo*
 Taro NOM eat-PST apple
 ‘the apple that Taro ate’

- b. $[_s \textit{Taroo-ga } t_i \textit{o } \textit{tabeta}] \textit{ringo}_i$

(b) in each case above represents the semantic structure of the corresponding (a): *t* represents the clause-internal gap, that is, the “missing argument position.” As these examples show, the case relationship of the head noun to the predicate in the relative clause can be of various types, such as nominative in (18), or accusative as in (19). As with English relative clauses, relative clauses in Japanese function like adjectives either in providing detailed or restrictive information about the head noun (restrictive relative clauses) or in supplying additional information about the head noun (non-restrictive relative clauses). There are nevertheless some clear differences between relative clauses in English and Japanese. Japanese relative clauses, for one thing, have

no “relative pronoun” connecting the relative clause with its head noun. Due to this absence of relative pronouns, some Japanese relative clauses can be ambiguous in the case relationship holding between the head noun and the predicate of the modifying clause. For example, (20a) is ambiguous between ‘the girl who Taro likes’ and ‘the girl who likes Taro,’ whose logical forms are given in (20b) and (20c), respectively

- (20) a. *Taroo ga suki-na onnanoko*
 Taro NOM like-COP girl
- b. [_s *t_i ga Taroo ga suki-na*] *onnanoko_i*
 NOM Taro NOM like-COP girl
 ‘the girl who likes Taro’
- c. [_s *Taroo ga t_i-ga suki-na*] *onnanoko_i*
 Taro NOM NOM like-COP girl
 ‘the girl whom Taro likes’

Here, the identity of the gap is ambiguous between the subject case-slot in (20b) and the object case-slot in (20c), both of which happen to be marked nominatively with the predicate *suki da* ‘like.’

The second type of clausal modification pointed out by Teramura (1992) is one in which no gap is evident internal to the modifying clause, so that the modified head NP bears no case relationship to the predicate in the modifying clause, a relationship Teramura calls *soto no kankei* ‘outer relationship.’ Such gapless modifying clauses can be further divided into at least three subtypes. The first subtype is where the modifying clause is in an appositive relationship to the modified head NP, with the modifying clause typically representing the content of the head NP, as in (21).

- (21) a. *daitooryoo wa taizin su-beki-da to-iu Taroo no iken*
 president TOP resign do-should-COP.NPST COMP Taro GEN opinion
 ‘Taro’s opinion that the president should resign’
- b. *kare ga wairo o morat-ta to-iu hanasi*
 he NOM bribes ACC take-PST COMP talk
 ‘talk that he took bribes’
- c. *senaka o muti de ut-are-ru to-iu batu*
 back ACC whip INS beat-PASS-NPST COMP punishment
 ‘a punishment where one is beaten on the back with a whip’
- d. *Hanako no mendoo o mi-ru to-iu boku no yakusoku*
 Hanako GEN care ACC see.to-NPST COMP I GEN promise
 ‘my promise to take care of Hanako’

In (21a), for example, the clause *daitooryoo wa taizin subekida* ‘the president should resign’ represents the content of *Taroo no iken* ‘Taro’s opinion.’ As seen in these examples, the complementizer (COMP) *to-iu* is frequently used with this type of modifying clause, though it is optional in the case of (21b), (21c), and (21d). In English, various forms such as *that* clauses, infinitive phrases, or *where* phrases are used in constructions corresponding to this type of content clause. The head NP in this type of construction is restricted to nouns of the type *riyuu* ‘reason,’ *iken* ‘opinion,’ *hanasi* ‘story,’ *batu* ‘punishment,’ *yakusoku* ‘promise,’ *keikaku* ‘plan,’ *zyookon* ‘condition,’ *nyuusu* ‘news,’ *zizitu* ‘fact,’ *yume* ‘dream,’ *syooko* ‘evidence,’ *uwasa* ‘rumor,’ *kangae* ‘view,’ and so on.

The second subtype of gapless modifying clause is where the head noun denotes some kind of physical perception produced by the event described in the modifying clause, a type of gapless modifying clause that can be termed a “perception-describing clause,” as exemplified in (22).

- (22) a. *sakana o yak-u nioi*
 fish ACC grill-NPST smell
 ‘the smell of (someone) grilling fish’
 b. *hito ga toor-u oto*
 people NOM go.by-NPST sound
 ‘the sound of people going by’

Nioi ‘smell’ and *oto* ‘sound’ in the above denote physical perceptions produced by the events of grilling fish and people going by, respectively.

Yet a third subtype of gapless modifying clause is where the content of the modifying clause can be regarded as a semantically necessary complement of the head noun, as in (23).

- (23) a. *Tyuuoo-sen ga okure-ta gen’in*
 Chuo-line NOM become.delayed-PST cause
 ‘the cause of the Chuo-line being delayed’
 b. *Hanako ga rikon-si-ta riyuu*
 Hanako NOM get.divorced-do-PST reason
 ‘the reason for Hanako getting a divorce’
 c. *kare ga hito o damasi-ta batu*
 he NOM someone ACC cheat-PST punishment
 ‘punishment for his having cheated someone’
 d. *Taroo ga hannin dear-u syooko*
 Taro NOM culprit COP-NPST evidence
 ‘the evidence for Taro being the culprit’

- e. *kono kai o hirak-u mokuteki*
 this meeting ACC hold-NPST purpose
 ‘the purpose for holding this meeting’

Note that head nouns of this type are unique in being semantically incomplete and thus not capable of denoting anything by themselves. *Gen-in* ‘cause’ in (23a), for instance, requires reference to a particular event relative to which it is interpreted, without which it would fail to denote anything, an event specified in this case by *Tyuuoo-sen ga okureta* ‘The Chuo-line was delayed.’ The modifying clause in a construction like (23a) is thus in an interdependent relationship with the head noun, as is equally the case with all the other examples in (23). Teramura (1992) terms this type of modifying clause *sootaiteki hozyuu setu* ‘relational complement clause’ and terms these head nouns *sootai meishi* ‘relational nouns’.

The head nouns in (23) are a special case of unsaturated noun, a type we introduced in connection with the type D “NP₁ no NP₂” construction in Section 2.1. These head nouns include a parameter X and are thus not capable of denoting anything by themselves. However, they differ from unsaturated nouns of the standard type such as (10b) in that they require a clause rather than an NP as their parameter, such as that provided by *Tyuuoo-sen ga okureta* ‘The Chuo-line was delayed’ for *gen’in* ‘cause’ in (23a)⁵.

We will refer to modifying clauses of the type seen in (23) as “parameter clauses” and their head nouns as “unsaturated nouns taking a clause as their parameter.” In this way, the relationship between such parameter clauses and their head nouns can be viewed as an extension of the type D “NP₁ no NP₂” construction discussed earlier, a point we will return to later.⁶

It is worth noting that *wh*-questions that question the content of a gapless modifying clause require different forms depending on whether they correspond to a content- or perception-describing clause versus a parameter clause. For content- or perception-describing clauses, such questions normally require the use of *don-na* ‘what kind of,’ as illustrated in (24) and (25).

- (24) a. A: *Kare wa donna batu o uke-masi-ta*
 he TOP what.kind.of punishment ACC receive-POL-PST
ka?
 Q
 ‘What kind of punishment did he receive?’

⁵ Yamaizumi (2010) points out that Teramura’s *sootai meishi* is nothing but a special type of an unsaturated noun that takes a clause as its parameter. See also Nishikawa (2013b).

⁶ Some of the unsaturated nouns in (23) may take either an NP or a clause as their parameter. Thus, *kazi no gen’in* ‘cause of the fire’, *zinin no riyuu* ‘the reason for the resignation’, and *kai no mokuteki* ‘the purpose of the meeting’ may be regarded as cases of type D of the “NP₁ no NP₂” construction.

- b. B: *Senaka o muti de ut-are-ru to-iu batu*
 back ACC whip INS beat-PASS-NPST COMP punishment
o uke-masi-ta.
 ACC receive-POL-PST
 ‘He received the punishment of being beaten on the back with a whip.’
- (25) a. A: *Sono toki donna nioi ga si-masi-ta ka?*
 that time what.kind.of smell NOM do-POL-PST Q
 ‘What kind of smell was there at that time?’
- b. B: *Sakana o yaku nioi ga si-masi-ta.*
 fish ACC grill-NPST smell NOM do-POL-PST
 ‘There was a smell like (someone) grilling fish.’

Parameter clauses, by contrast, normally require the use of *nani-no* ‘what+GEN’ instead of *don-na* ‘what kind of,’ as shown in (26) and (27).

- (26) a. A: *Kare wa nani-no batu o uke-masi-ta ka?*
 he TOP what-GEN punishment ACC receive-POL-PST Q
 ‘What did he receive a punishment for?’
- b. B: *Hito o damasi-ta batu o uke-masi-ta.*
 someone ACC deceive-PST punishment ACC cheat-POL-PST
 ‘He received a punishment for cheating someone.’
- (27) a. A: *Anata wa nani-no gen’in o sirabe-tei-mas-u*
 you TOP what-GEN cause ACC investigate-PROG-POL-NPST
ka?
 Q
 ‘What are you investigating the cause of?’
- b. B: *Tyuuoo-sen ga okure-ta gen’in o*
 Chuo-line NOM become.delayed-PST cause ACC
sirabe-tei-mas-u.
 investigate-PROG-POL-NPST
 ‘I’m investigating the cause of the Chuo-line being delayed.’

Certain nouns such as *batu* ‘punishment,’ *riyuu* ‘reason,’ and *syooko* ‘evidence’ allow the incorporation of both a “content clause” and a “parameter clause” in the same construction, as shown in (28), (29), and (30).

- (28) *senaka o muti de ut-are-ru to-iu kare ga*
 back ACC whip INS beat-PASS-NPST COMP he NOM
hito o damasi-ta batu.
 someone ACC cheat-PST punishment
 ‘punishment for his cheating someone, where he is beaten on the back with
 a whip’
- (29) *otto ga hurin o si-ta to-iu Hanako ga*
 husband NOM affair ACC commit-PST COMP Hanako NOM
rikon-si-ta riyuu
 get.divorced-do PST reason
 ‘the reason for Hanako’s getting divorced, that is, that her husband had an
 affair’
- (30) *Taroo no simon ga nokot-tei-ta to-iu Taroo ga*
 Taro GEN fingerprint NOM remain-RES-PST COMP Taro NOM
hannin dear-u syooko
 culprit COP-NPST evidence
 ‘the evidence for Taro being the culprit, that is, that his fingerprints showed’

In this subsection, we have discussed the inherent meaning of nouns or NPs functioning as head nouns in clausal noun modification, noting the crucial distinction between standard gapping relative clause constructions (*uti no kankei* ‘inner relationship’) and gapless modifying clause constructions (*soto no kankei* ‘outer relationship’). For the latter, we have distinguished at least three types, that is, (i) content clauses, (ii) perception-describing clauses, and (iii) parameter clauses. Note that some cases of clausal noun modification may be ambiguous between the gapping relative clause type and the gapless modifying clause type, as in (31).

- (31) *inu ga tikayotteku-ru nioi*
 dog NOM approach-NPST smell
 ‘a smell to which a dog is attracted’
 ‘the smell of a dog approaching’

The ambiguity in (31) is between a gapping relative clause interpretation and a gapless perception-describing clause interpretation, as reflected in the distinct English glosses. Compare this to (32).

- (32) *Hanako ga sir-ana-i riyuu*
 Hanako NOM come.to.know-NEG-NPST reason
 ‘a reason that Hanako does not know’
 ‘the reason why Hanako does not know’

- (34) *Syatyoo wa tensai da.*
 company.president TOP genius COP.NPST
 ‘The company president is a genius.’

Here, the subject NP₁ *syatyoo* ‘company president’ is referential, that is, makes reference to a particular individual. By contrast, the predicate NP₂ *tensai* ‘genius’, traditionally called a predicate nominal, is non-referential in the sense that it denotes a property ascribed to the referent of NP₁. Thus, (34) says of a particular individual that he or she has the property of being a genius. We will refer to these distinct semantic functions of *syatyoo* ‘company president’ and *tensai* ‘genius’ in (34) as those of a “referential NP” and “property NP,” respectively, and we will refer to the sentence in (34) as a whole as a “predicational sentence.” In general, copular sentences of the form (33a) are predicational if and only if there is an individual that can be independently identified as the referent of NP₁ and some property expressed by NP₂ is ascribed to that individual. According to such a definition, (35) is also a predicational sentence.

- (35) *Taroo wa syatyoo da.*
 Taro TOP company.president COP.NPST
 ‘Taro is the president of the company.’

Here, the subject NP₁ *Taroo* is a referential NP referring to the particular individual Taro, whereas the NP₂ *syatyoo* ‘company president’ is a property NP denoting a property ascribed to the referent of NP₁. (35) says of the particular individual Taro that he has the property of being the president of the company. The semantic function that *syatyoo* ‘company president’ performs in (34) and (35) is thus essentially different, despite sharing the same intrinsic meaning in the two cases.

Not all *wa*-copular sentences of the type (33a) are, however, predicational. Some, such as that in (36), have a different interpretation.

- (36) *Syatyoo wa ano hito da.*
 company.president top⁸ that person COP.NPST
 ‘The company president is that person.’

(36) is essentially different from predicational sentences such as (34). Here, it is not the case that the subject NP₁ *syatyoo* ‘company president’ refers to a particular individual and that some property expressed by the NP₂ *ano hito* ‘that person’ is ascribed

⁸ The function of specificational sentences like (36) is not that of introducing a topic and then saying something about it. Therefore, *wa* in (36) is not in fact a topic-marker at all. In order to distinguish this usage of *wa* from a genuine topic-marker *wa* such as in (34) and (35), I adopt the grammatical abbreviation “top” instead of “TOP.” See Nishiyama (2003: 351-392).

to that individual. In fact, the subject NP_i *syatyyoo* ‘company president’ in (36) does not refer to anyone. It would be nonsensical to ask which person *syatyyoo* ‘company president’ refers to in (36) since determining its referent is precisely the point of the sentence. Rather, the subject NP_i *syatyyoo* ‘company president’ in (36) incorporates in its meaning a “variable” to which a value is to be assigned. It is in this sense closely associated in its meaning with a *wh*-question such as (37).

- (37) *Syatyoo wa dono hito des-u ka?*
 company.president top which person COP.POL-NPST Q
 'Which person is the president of the company?'

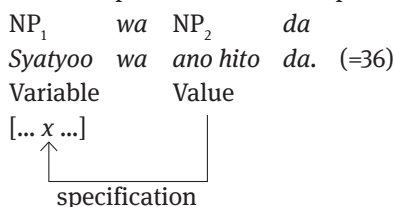
Sentence (36) provides the answer to this *wh*-question, namely *ano hito* ‘that person.’ *Wa*-copular sentences such as (36) are what I will call “inverted specificational sentences.” To be precise, the function of an inverted specificational sentence is to fulfill the variable *x* in a propositional function such as [*x* is *syatyoo*]. The subject NP₁ of an inverted specificational sentences like (36) is thus not a referential NP but a variable NP,⁹ i. e., an NP that semantically contains a variable. The predicate NP₂ *ano hito* ‘that person’ in (36), on the other hand, provides a value to the variable in the subject NP₁. I will refer to this type of NP as a “value NP.” In general, a copular sentence of the form (33a) is an inverted specificational sentence if and only if NP₁ contains a variable for which NP₂ specifies the value. In this way, the semantic functions that *syatyoo* ‘company president’ performs in (34) and (36) are different: the former is a referential NP, whereas the latter is a variable NP. It is worth noting that, despite the difference in semantic function, there is an intrinsic meaning to *syatyoo* ‘company president’ that both sentences have in common.

The essential difference between a predicational *wa*-copular sentence like (34) and an inverted specificational *wa*-copular sentence like (36) with respect to the semantic function of NPs can be represented as follows.

- (38) a. predicational *wa*-copular sentence
- | | | | |
|----------------|-----------|---------------|------------------|
| NP_1 | <i>wa</i> | NP_2 | <i>da</i> |
| <i>Syatyoo</i> | <i>wa</i> | <i>tensai</i> | <i>da.</i> (=34) |
| Referential | | Property | |
| Individual | | | |
- ascription

⁹ Nishiyama (2008, 2016) uses “NPiV,” which means “an NP involving a variable” instead of “Variable NP.”

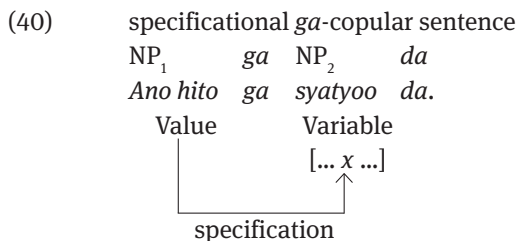
- b. inverted specificational *wa*-copular sentence



Among the interesting characteristics that distinguish inverted specificational *wa*-copular sentences from predicational *wa*-copular sentences are that inverted specificational *wa*-copular sentences can be paraphrased by a *ga*-copular sentence such as (33b) with the order of the two NPs reversed. Thus, (36) can be transformed into (39) without any semantic effect.

- (39) *Ano hito ga syatyoo da.*
 that person NOM company.president COP.NPST
 ‘(It is) that person (who) is the president of the company.’

(39), in which *ano hito* ‘that person’ is marked with *ga*, expresses the meaning “if you ask who the company president is, it is that person.” (39) is an example of a specificational sentence, where the predicate NP₂ *syatyoo* ‘company president’ is a variable NP and the subject NP₁ is a value NP. Thus, (39) may be semantically represented as follows:



The fact that the direction of the arrow from Value to Variable is the same in both (38b) and (40) shows that the semantic function that *syatyoo* ‘company president’ performs is the same; it performs the function of a variable NP. By contrast, there is no reverse version of a predicational *wa*-sentence without a change in semantic effect. For instance, if we reverse NP₁ and NP₂ in (34) and substitute *wa* with *ga*, the result will be (41). However, there is a significant difference in meaning between (34) and (41).

- (41) *Tensai ga syatyoo da.*
 genius NOM company.president COP.NPST
 ‘A genius is the president of the company.’

Finally, consider (42).

- (42) *Sekininsya wa syatyoo da.*
 person.in.charge top company.president COP.NPST
 ‘The person in charge is the president of the company.’

(42) is most naturally understood with an inverted specificational interpretation “if you ask who the person in charge is, it is the president of the company.” Here the subject NP₁ *sekininsya* ‘the person in charge’ is a variable NP and the predicate NP₂ *syatyoo* ‘company president’ a value NP.

The above observations show that an NP such as *syatyoo* ‘company president’ can perform various functions in a copular sentence, depending on its grammatical position, although its inherent meaning ‘company president’ is constant under any interpretation. Table 1 summarizes these different semantic functions.

Table 1: The various semantic functions of an NP in copular sentences (exemplified by *syatyoo* ‘company president’)

Referential NP:	(34) <i>Syatyoo wa tensai da.</i>
Property NP:	(35) <i>Taroo wa syatyoo da.</i>
Variable NP:	(36) <i>Syatyoo wa ano hito da.</i> (37) <i>Syatyoo wa dono hito desu ka?</i> (39) <i>Ano hito ga syatyoo da.</i>
Value NP:	(42) <i>Sekininsya wa syatyoo da.</i>

In general, which of the different semantic functions of referential NP, property NP, variable NP, or value NP is taken by an NP in a copular sentence depends on (i) which interpretation is given to the copular sentence (i.e. predicational reading, or specificational reading), and (ii) the grammatical position of the NP in the sentence. Nevertheless, there is an inherent meaning of the NP (e.g., “company president”) that is invariant under any of these interpretations.

3.2 The ambiguity of *wa*-copular sentences and the semantic functions of NPs

How these distinctions in the semantic functions of NPs in copular sentences shown in Table 1 are reflected in the meaning of a copular sentence can be seen particu-

larly clearly by considering the ambiguity present in certain *wa*-copular sentences between a predicational reading and an inverted specificational reading. Consider the following:

- (43) *Watakusi ga tabe-na-i mono wa inu no esa da.*
 I NOM eat-NEG-NPST thing TOP/top dog GEN food COP.NPST
 ‘What I don’t eat is dogfood.’

On the predicational reading, (43) is an assertion about a particular food which has already been identified by the subject NP, *watakusi ga tabe-nai mono* ‘what I don’t eat’. It says of that food that it is dogfood. On this reading, the subject NP *watakusi ga tabe-nai mono* ‘what I don’t eat’ is a referential NP and the predicate NP *inu no esa* ‘dogfood’ is a property NP. (43) can also be interpreted as an inverted specificational reading. Suppose that we ask our guest whether there is anything he could never eat, to which he might respond as in (43). On this reading, the subject NP *watakusi ga tabe-nai mono* ‘what I don’t eat’ is a variable NP denoting the propositional function $[x \text{ is } watakusi \text{ ga } tabe-nai \text{ mono}]$, and the predicate NP *inu no esa* ‘dogfood’ is its value. Only on this inverted specificational reading can (43) be paraphrased as a specificational sentence like (44)¹⁰.

- (44) *Inu no esa ga watakusi ga tabe-na-i mono da.*
 dog GEN food NOM I NOM eat-NEG-NPST thing COP.NPST
 ‘Dogfood is what I don’t eat.’

Note that the source of the ambiguity in (43) is not an ambiguity in the inherent meaning of the subject NP, *watakusi ga tabe-nai mono* ‘what I don’t eat,’ which is itself constant. It is rather due to a distinction in the semantic function of the subject of the sentence between referential and variable NP. The ambiguity due to such a distinction in semantic function can be seen not only in *wa*-copular sentences but in other constructions in Japanese as well, which we consider in the following subsections.

10 The English translation of (43) in (i) is also ambiguous between a predicational reading and a specificational reading.

(i) *What I don’t eat is dogfood.* (cf. Declerck 1988: 69)

It should be noted that the two readings of (i) are not distinguished by stress placement. For instance, in (ii) the NP *dogfood* is marked as the focally stressed constituent.

(ii) *What I don’t eat is DOGFOOD.*

The focally stressed NP *dogfood* can serve as an answer to a question given in the background. However, sentence (ii) is still ambiguous between a predicational reading and a specificational reading.

3.3 The ambiguity of *change*-sentences and the semantic functions of NPs

It is well known that sentences of the form *NP ga kawar-u* ‘NP changes’ (henceforth “*change*-sentences”) are ambiguous. Consider the following:

- (45) *Hanako no suki na sakkyokuka ga kawat-ta.*
 Hanako GEN like COP composer NOM change-PST
 ‘Hanako’s favorite composer has changed’.

(45) has two interpretations. On one reading, the subject NP *Hanako no sukina sakkyokuka* ‘Hanako’s favorite composer’ is a referential NP referring to a certain composer, say Messiaen, and the sentence as a whole says that Messiaen has undergone a change. He used to be an introvert, for example, but now he is an extrovert. We will call this reading of a *change*-sentence the “transformation reading.” In this reading, there is an individual referred to by the subject NP, and the sentence as a whole says of that individual that he/she has undergone a change. The other reading of (45) is that a certain composer, say Mozart, used to be Hanako’s favorite but now Hanako likes a different composer, say Bach, the most. We will call this reading of a *change*-sentence the “replacement reading.” On the replacement reading, the subject NP does not refer to any individual. It would clearly be nonsensical to ask which person *Hanako no sukina sakkyokuka* ‘Hanako’s favorite composer’ refers to in this reading since the point of the sentence is precisely to determine that. Rather, the subject NP here is a variable NP, denoting the propositional function [*x* is *Hanako no sukina sakkyokuka*]. The sentence states that a certain individual, say Mozart, used to be the value of *x*, but now that value has been replaced by another individual, say Bach. In a nutshell, the subject NP of a Japanese *change*-sentence exhibits the different semantic functions of referential NP or variable NP depending on whether the *change*-sentence receives a replacement reading or a transformation reading. Nevertheless, I must stress again that the inherent meaning of the subject NP, here *Hanako no sukina sakkyokuka* ‘Hanako’s favorite composer,’ is constant under either reading.

A close relationship exists between the replacement reading of a *change*-sentence and the specificational reading of a copular sentence. Note that (45) on the replacement reading is closely related to the *wh*-question in (46).

- (46) *Hanako no suki na sakkyokuka wa dare des-u ka?*
 Hanako GEN like COP composer top who COP.POL-NPST Q
 ‘Who is Hanako’s favorite composer?’

We could say that the sentence as a whole in (45) indicates that the answer to the question in (46) has changed, for instance that the answer to (46) used to be (47a) some years ago but is now (47b).

- (47) a. *Hanako no suki na sakkyokuka wa mootuaruto*
 Hanako GEN like COP composer top Mozart
des-u.
 COP.POL-NPST
 ‘Hanako’s favorite composer is Mozart’.
- b. *Hanako no suki na sakkyokuka wa bahha des-u.*
 Hanako GEN like COP composer top Bach COP.POL-NPST
 ‘Hanako’s favorite composer is Bach’.

Note that each sentence in (47) is an inverted specificational *wa*-copular sentence, showing that the replacement reading expresses a “change in specification.”

A close relationship can likewise be seen between the transformation reading of a *change*-sentence and the predication reading of a copular sentence. Note first the close affinity the transformation reading of (45) bears to the *wh*-question in (48).

- (48) *Hanako no suki na sakkyokuka wa donna hito*
 Hanako GEN like COP composer TOP what.kind.of person
des-u ka?
 COP.POL-NPST Q
 ‘What is Hanako’s favorite composer like?’

Here we could say that the sentence as a whole in (45) indicates that the answer to the question in (48) has changed, for instance that the answer to (48) used to be (49a) some years ago, but is now (49b).

- (49) a. *Hanako no suki na sakkyokuka wa naikooteki*
 Hanako GEN like COP composer TOP introvert
des-u.
 COP.POL-NPST
 ‘Hanako’s favorite composer is an introvert.’
- b. *Hanako no suki na sakkyokuka wa gaikooteki*
 Hanako GEN like COP composer TOP extrovert
des-u.
 COP.POL-NPST
 ‘Hanako’s favorite composer is an extrovert.’

Note that (49a) and (49b) are predication copular sentences, showing that the transformation reading expresses a “change in predication.” Seen in this way, the ambiguity between the transformation reading and replacement reading of a *change*-sentence can only satisfactorily be explained in terms of distinct semantic functions in

the subject NP, namely, whether it is a referential NP or a variable NP. Furthermore, this ambiguity can be seen as a distinction between a change in predication, on the one hand, and a change in specification, on the other. A close relationship exists in this way between copular sentences and *change*-sentences.

3.4 Existential sentences and the semantic function of NPs

Together with copular sentences, existential sentences represent one of the most basic of construction types in natural language. Past research on existential sentences in Japanese has primarily focused on existential sentences with locative expressions, so-called “locational existential sentences” that take the form indicated in (50).

- (50) NP_1 *ni* NP_2 *ga* *ar-u/i-ru*
 LOC NOM exist (inanimate)-NPST/exist (animate)-NPST

In general, locational existential sentences express a spatial relationship between an entity referred to by NP_2 and a location expressed by NP_1 . Previous research on such sentences has been largely concerned with the behavior of the two existential verbs *ar-u* ‘exist (inanimate)’ and *i-ru* ‘exist (animate),’ the syntactic properties of locative phrases, and definiteness restrictions on the nominative argument in examples such as those in (51).

- (51) a. *Kooen ni Hanako no koibito ga i-ru/*ar-u.*
 park LOC Hanako GEN boyfriend NOM exist-NPST/exist-NPST
 ‘Hanako’s boyfriend is in the park.’
 b. *Tana ni takusan no hon ga ar-u/*i-ru.*
 shelf LOC many GEN book NOM exist-NPST/exist-NPST
 ‘There are many books on the desk.’

One subject of controversy has been whether or not there exists a syntactic or semantic difference between (52a) and (52b).

- (52) a. *Hanako ni koibito ga i-ru.*
 Hanako DAT/LOC boyfriend NOM exist-NPST/have-NPST
 ‘Hanako has a boyfriend.’
 b. *Hanako ni koibito ga ar-u.*
 Hanako DAT boyfriend NOM have
 ‘Hanako has a boyfriend.’

For instance, Shibatani (1978: 191) argues that (52a) belongs to the same type of existential sentence as (51), whereas (52b) is a possessive sentence, *i-ru* in (52a) being intransitive and *ar-u* in (52b) being transitive. According to his view, *koibito* ‘boyfriend’ in (52a) is therefore a subject, whereas *koibito* ‘boyfriend’ in (52b) is an object. On the other hand, Kishimoto (2016) argues that both (52a) and (52b) are possessive sentences. According to him, not only *ar-u* in (52b) but also *i-ru* in (52a) are transitive predicates and *koibito* ‘boyfriend’ is in both cases the object in a possessive construction.

In my view, however, such proposals overlook the semantic function of NPs appearing in existential and possessive constructions. In a locational existential sentence such as (51), the subject NP is a referential NP. If we assume that *Hanako no koibito* ‘Hanako’s boyfriend’ refers to Taro, for example, then on the basis of (51a) it would be possible to say (53).

- (53) *Kooen ni Taroo ga i-ru.*
 park LOC Taro NOM exist-NPST
 ‘Taro is in the park.’

(53) is a locational existential sentence just as is (51a). In a possessive sentence, on the other hand, the object NP is not a referential NP. *Koibito* ‘boyfriend’ in (52b), for example, does not refer to a particular individual such as Taro. Even if *Hanako no koibito* ‘Hanako’s boyfriend’ refers to Taro, therefore, it is not possible to say (54) on the basis of (52b). (54) is in fact not even acceptable.

- (54) **Hanako ni Taroo ga ar-u.*
 Hanako DAT Taro NOM have-NPST
 (lit.) ‘Hanako has Taro.’

As we point out later, the object NP in possessive sentences such as (52b) is a variable NP, not a referential NP. Essentially the same applies to *koibito* ‘boyfriend’ in (52a), which is not a referential NP referring to any particular individual such as Taro. Even if *Hanako no koibito* ‘Hanako’s boyfriend’ refers to Taro, therefore, it would not be possible to say (55) on the basis of (52a).

- (55) *Hanako ni Taroo ga i-ru.*
 Hanako LOC Taro NOM exist-NPST
 (lit.) ‘Hanako has Taro.’

This shows that (52a) is not a locational existential sentence but a possessive sentence like (52b), as Kishimoto (2016: 576-578) suggests. Incidentally, (55) itself is acceptable, but it is neither a locational existential sentence nor a possessive sentence. Rather, it

is an example of what we will call a “list existential sentence.”¹¹ Consider the following conversation:

- (56) a. A: *Hanako o sasae-ru hito wa i-na-i ne.*
 Hanako ACC support-NPST person top exist-NEG-NPST SF
 ‘I think there is no one to support Hanako.’
- b. B: *Hanako ni Taroo ga i-ru.*
 Hanako LOC Taro NOM exist-NPST
 ‘Hanako has Taro.’

In (56b), the nominative argument *Taroo* specifies the value of x in the propositional function [x is *Hanako o sasaeru hito*]. Thus, the semantic function of the nominative argument *Taroo* is that of a “value NP.”

In summary, Shibatani (1978: 192) regards (51), (52a), and (55) as the same type of locational existential sentence, all taking the form in (50), as distinct from a possessive sentence such as (52b). Kishimoto (2016), by contrast, regards (52a), (52b) and (55) as possessive sentences¹² to be distinguished from locational existential sentences such as (51). However, if we take into account the semantic functions of the nominative arguments in those sentences, it is clear that (51), (52), and (55) are each a different type, as shown in Table 2.

Table 2: Semantic functions of NP₂ in [NP₁ *ni* NP₂ *ga iru/aru*]

Example	Sentence type	Semantic function of NP ₂
(51a) <i>Kooen ni Hanako no koibito ga iru.</i>	Locational existential	Referential NP
(51b) <i>Tana ni takusan no hon ga aru.</i>	Locational existential	Referential NP
(52a) <i>Hanako ni koibito ga iru.</i>	Possessive	Variable NP
(52b) <i>Hanako ni koibito ga aru.</i>	Possessive	Variable NP
(55) <i>Hanako ni Taroo ga iru.</i>	List existential	Value NP

Previous studies of Japanese existential sentences (Kuno 1973a, 1973b; Shibatanai 1978; Kishimoto 2016) furthermore assume that existential meaning in Japanese sentences is fundamentally expressed by constructions that take a *ni*-marked locative as an adjunct, as in (57).

¹¹ For more on list existential sentences, see Rando and Napoli (1978).

¹² Kishimoto (2016: 589-595) does recognize that a sentence like (55) has a “list interpretation.” Nevertheless, he regards this as a variant of possessive meaning and argues for a distinction between standard possessive sentences and list possessive sentences. However, there is no need to classify list existential sentences as a subtype of possessive sentences, and it would in fact be difficult to see how a typical list existential sentence such as (i) could be understood as a variety of possessive sentence.
 (i) There’s Mary, John, and Susan.

(57)	Lexical meaning:	‘x	is located at	y’	
	Grammatical relation:	SBJ		ADJUNCT	
	Case marking:	NOM		LOC (ni)	Kishimoto (2016: 575)

However, (57) represents just one of many types of existential meaning in Japanese sentences. If we take into account the semantic functions that NPs perform when they appear in existential sentences, we can find a new type of existential meaning in Japanese that is essentially different from the locational existential meaning represented in (57). Consider the following:

- (58) a. *Roppon asi no inu wa i-na-i.*
 six leg GEN dog top exist-NEG-NPST
 ‘There are no six-legged dogs.’
- b. *Watakusi ga tok-u kotonodeki-na-i mondai ga ar-u.*
 I NOM solve-NPST be.able-NEG-NPST problem NOM
 exist-NPST
 ‘There are problems that I cannot solve.’
- c. *Eigo ni honyaku-deki-na-i nihongo no hyoogen ga ar-u.*
 English GOAL translate-POT-NEG-NPST Japanese GEN expression
 NOM exist-NPST
 ‘There are some Japanese expressions you cannot translate into English.’
 [cf. Kuno 1973a: 288]
- d. *Anatagata no naka ni watakusi o uragit-ta mono ga i-ru.*
 you GEN middle LOC me ACC betray-PST person
 NOM exist-NPST
 ‘Someone among you has betrayed me.’
- e. *Kono mondai o tok-u kotonodeki-ru hito ga i-ru.*
 this problem ACC solve-NPST be.able-NPST person NOM
 exist-NPST
 ‘There are people who can solve this problem.’

This type of existential sentence, which we will call an “ontological existential sentence,” contains no locative expression. It is clear that the subject NP in such sentences (e. g., *roppon asi no inu* ‘six-legged dogs’ in (58a)), does not refer to any entity in

the world – in the case of (58a) no entity would in fact even exist for the subject noun to refer to. We claim instead that the subject NP here denotes a propositional function containing a variable that has yet to be assigned a value. In other words, *Roppon asi no inu* ‘six-legged dogs’ in (58a) is a variable NP denoting the propositional function [x is *roppon asi no inu*], and the sentence as a whole states that no value exists to make this propositional function true, and similarly for the other examples in (58). The meaning of an ontological existential sentence is merely to assert the existence or non-existence of a value for the variable NP in subject position, and such sentences therefore lack a locative phrase. It follows that *anatagata no nakani* ‘among you’ in (58d) is not a locative phrase but a phrase that restricts the domain of possible values for the variable contained in the subject NP.

Kuno (1973a, 1973b) argues that implicit locatives such as *somewhere*, *in this world*, etc., should be recognized in sentences like (59) on the assumption that every existential sentence contains a locative even if it is not phonetically realized.

- (59) a. *There are there-sentences which lack locatives.* [Kuno 1973a: 288]
 b. *There are two more weeks of school.* [Kuno 1973b: 390]

However, Kuno’s assumption is dubious, and we maintain that (59a) and (59b) are better treated as ontological existential sentences whose subject NPs, *there-sentences which lack locatives* and *two more weeks of school* are variable NPs, rather than as locational existential sentences. Therefore, implicit locatives need not be supplied here. Some existential sentences are, it is true, ambiguous between a locational existential reading and an ontological existential reading. Consider the following example:

- (60) *Kyotoo daigaku ni nooberusyoo no zyusyoosya ga*
 Kyoto University LOC Nobel.Prize GEN winner NOM
i-ru.
 exist-NPST
 ‘There is a professor in Kyoto University who won the Nobel Prize.’

One interpretation of (60) is as a locational existential sentence, in which case *Kyotoo daigaku ni* ‘at Kyoto University’ functions as a locative expression much like *in this garden* or *on the table*. (60) would under that interpretation be true even when a professor from another institution who won the Nobel Prize happened to visit Kyoto University for a temporary period of time. The other reading of (60) is as an ontological existential sentence, in which case (60) would convey that there is a member of the faculty of Kyoto University who is a winner of the Nobel Prize. In this case, the NP *nooberusyoo no zyusyoosya* ‘professor who won the Nobel Prize’ functions as a variable NP denoting the propositional function [x is *nooberusyoo no zyusyoosya*], and the sentence as a whole asserts the existence of a value for this variable that makes the proposition true. Under this interpretation, *Kyotoo daigaku ni* ‘at Kyoto University’ is

not a locational expression, but rather denotes the faculty of Kyoto University as the domain of the variable in the variable NP.

In our earlier discussion of the possessive sentence (52b) above, we pointed out that *koibito* ‘boyfriend’ is not a referential NP but a variable NP. This suggests that there is a close semantic relationship between possessive sentences and ontological existential sentences, a relationship we will take up further in section 4.1.

3.5 Existential sentences and the definiteness restriction

As pointed out in Milsark (1974), definite class NPs cannot appear in English existential sentences, as seen in (61a).

- (61) a. **There are {these /all/most/both} boys in the room.*
 b. *There are {some/many/three} boys in the room.*

Kishimoto (2016: 579-584) observes that the nominative argument in Japanese possessive sentences is constrained by the same definiteness restriction, as seen in (62).

- (62) a. *Ken ni {takusan/huta-ri} no kyoodai ga*
 Ken DAT {many/two-CLF} GEN brother NOM
 {ar-u/i-ru}.
 {have.INAN-PRS/have.ANM-PRS}
 ‘Ken has {many /two} brothers.’
 b. **Ken ni {hotondo/subete/ryoohoo} no kyoodai*
 Ken DAT {most/all/both} GEN brother
 ga {ar-u/i-ru}.
 NOM {have.INAN-PRS/have.ANM-PRS}
 ‘Ken has {most/all/both} brothers.’ Kishimoto (2016: 580)

As seen in the contrast in acceptability between (62a) and (62b), weak quantifiers like *takusan* ‘many’ and *huta-ri* ‘two’ are possible with the nominative argument in a possessive construction, whereas strong quantifiers like *hotondo* ‘almost’, *subete* ‘all’, and *ryoohoo* ‘both’ are not. Kishimoto (2016: 581) also observes that this definiteness restriction does not apply to the nominative argument in locative existential sentences in Japanese, as seen in (63).

- (63) a. *Tana ni {hotondo/subete/takusan/ikuraka} no hon ga*
 shelf LOC {most/all/many/some} GEN book NOM
 ar-u.
 be.INAN-PRS
 ‘{Most/All/Many/Some} books are on the shelf.’

- b. *Kooen ni {hotondo/subete/takusan/san-nin} no hito ga*
 park LOC {most/all/many/three-CLF} GEN person NOM
i-ru.
 be.ANM-PRS
 ‘{Most/all/many/three} people are in the park.’ Kishimoto (2016: 581)

From these observations, Kishimoto (2016: 580–581) makes the claim in (64).

- (64) Only the nominative arguments of the possessive *ar-u* and *i-ru* are constrained by the definiteness restriction. The definiteness effect is not observed for the arguments of existential *ar-u* and *i-ru*.

Consider now the following examples with quantifiers added to (58e), which we earlier saw is an example of an ontological existential sentence:

- (65) a. *Kono mondai o tok-u kotonodeki-ru hito ga*
 this problem ACC solve be.able-NPST person NOM
{takusan/huta-ri} i-ru.
 {many/two-CLF} exist-NPST
 ‘There are {many/two} people who can solve this problem.’
 b. **Kono mondai o tok-u kotonodeki-ru hito ga*
 this problem ACC solve be.able-NPST person NOM
{hotondo/subete} i-ru.
 {most/all} exist-NPST
 (lit.) ‘There are {most/all} people who can solve this problem.’

In contrast to (65a), where weak quantifiers like *takusan* ‘many’ and *huta-ri* ‘two’ are possible with the nominative argument of *i-ru* under an existential reading, (65b) is ungrammatical with strong quantifiers like *hotondo* ‘almost’ and *subete* ‘all’ in the same context, indicating that the nominative argument in an ontological existential sentence is constrained by the definiteness restriction and thus constituting a counterexample to Kishimoto’s claim in (64). Recall that the semantic function of the subject NP in an ontological existential sentence is not that of a referential NP but a variable NP, as is the semantic function of the object NP in a possessive sentence, indicating that it is the semantic function of a variable NP that is crucial to determining whether or not a sentence containing that NP is subject to the definiteness restriction and, more broadly, confirming the crucial relevance of the semantic function of NPs in existential sentences to the grammaticality of such sentences.

In this section, we have observed that a single NP can perform the various semantic functions of referential NP, property NP, variable NP, or value NP, depending on its grammatical position in copular sentences, *change*-sentences, and existential sen-

tences. In particular, we have noted how the functional distinction between referential and variable NP contributes to the ambiguity of the sentence as a whole containing such NPs.

4 The interaction between intrinsic meaning of NPs and their semantic functions

In Section 2, we discussed the intrinsic meaning of NPs with special reference to the “NP₁ *no* NP₂” construction and clausal NP modification. In Section 3, we argued that NPs perform various semantic functions in copular and other sentence types, depending on their grammatical position in such sentences and pointed out that the distinction between referential and variable NPs is significant in contributing to the ambiguity of such sentences. In this section, we will discuss the significance of the interaction between the intrinsic meaning of NPs and their semantic function in a given sentence. For this purpose, we will take up three construction types: possessive constructions, constructions of the *Zoo wa hana ga nagai* type, and the so-called *kaki-ryoori* construction type. Our goal here is to demonstrate that a semantic analysis of NPs that incorporates two perspectives, namely (i) the intrinsic meaning of NPs, and (ii) the semantic functions of NPs in a sentence, contributes to a more accurate and insightful analysis of these construction types.

4.1 The possessive constructions and double subjects

In Section 3.4, we pointed out there is a close relationship between ontological existential and possessive sentences, in that the semantic function of the nominative argument in both sentence types is that of a variable NP, not a referential NP. We noted in Section 3.5 that the similarity of the two constructions types is confirmed by the fact that the nominative argument in both cases is subject to the definiteness restriction. The present subsection addresses the reason for such a similarity between the two sentence types. Consider first the following example:

- (66) *Berugii no kokuoo ga i-ru.*
 Belgium GEN king NOM exist-NPST
 ‘There is a king of Belgium.’

(66) is ambiguous between a locative existential reading and an ontological existential reading. If we consider this sentence in a context where an appropriate locative phrase can be provided, it could be interpreted as a locative existential sentence. Otherwise, it would be interpreted as an ontological existential sentence. On the latter

reading, which can be roughly paraphrased as “Belgium is a monarchy,” it is obvious that the subject NP *Berugii no kokuoo* ‘king of Belgium’ does not refer to any particular individual in the world. It could not in fact do so because, in the case that (66) is false, there would be no king of Belgium for the sentence to be about. Based on this, we claim that *Berugii no kokuoo* ‘king of Belgium’ of (66) is a variable NP denoting the propositional function [x is *Berugii no kokuoo*], and the sentence as a whole states that a value exists for this variable that makes this proposition true. Now consider the following:

- (67) *Berugii wa kokuoo ga i-ru.*
 Belgium TOP king NOM exist-NPST
 (lit.) ‘Belgium is such that there is a king’.

(67) is a possessive sentence with a meaning that appears to be close to (66), but there is in fact a syntactic and semantic difference between the two. Nishiyama (2009, 2013) analyzes (67) as a double subject sentence that can be represented as in (68).

- (68) structure of a possessive construction
-
- ```

graph TD
 S1["S (predicational copular sentence)"] --- NP1["NP1"]
 S1 --- S2["S (ontological existential sentence)"]
 NP1 --- wa["wa"]
 S2 --- NP2["NP2"]
 S2 --- i_ru["i-ru"]
 NP2 --- ga["ga"]

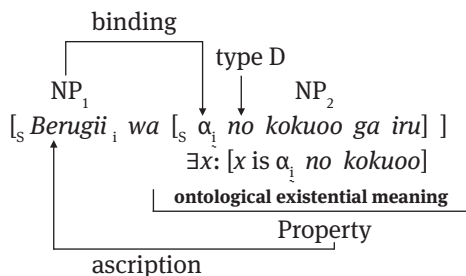
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On this analysis, (67) is a complex sentence where the main clause is a predicational copular sentence. As such, the main sentence is about *Berugii* ‘Belgium,’ and to this a property is ascribed that corresponds in meaning to an ontological existential sentence of the form (69).

- (69) ( $\alpha$  no) *kokuoo ga i-ru.*  
 ( $\alpha$  GEN) king NOM exist-NPST  
 ‘There is a king of  $\alpha$ .’

The ontological existential sentence in (69), with subject NP<sub>2</sub> *kokuoo* ‘king,’ is embedded in the predicate position of (67). Since *kokuoo* ‘king’ in (69) is a variable NP, it follows that *kokuoo* ‘king’ in (67) is also a variable NP. It is for this reason that the semantic function of the nominative argument in both ontological existential sentences like (66) and possessive sentences like (67) are variable NPs. The semantic structure of (67) can thus be represented as in (70).

(70)



It should be noted here that the NP<sub>2</sub> *kokuoo* ‘king’ is an unsaturated noun and that its parameter is a variable  $\alpha$ , which is bound by the main subject NP<sub>1</sub> *Berugii* ‘Belgium.’ In this way, there is a binding relation between NP<sub>1</sub> and the variable  $\alpha$  of NP<sub>2</sub>. This binding relation is represented by the index “<sub>i</sub>.” If there is no binding relation between NP<sub>1</sub> and the variable  $\alpha$  of NP<sub>2</sub>, no possessive meaning arises from the *wa*-sentence. For instance, neither example in (71) can be given a possessive reading due to the lack of a variable  $\alpha$  accompanying NP<sub>2</sub> and the consequent failure of the necessary binding relation to be established between NP<sub>1</sub> and the variable  $\alpha$  of NP<sub>2</sub>, even were an ontological existential sentence to be embedded in the predication copular sentence.

- (71) a. \**Kono ringo wa roppon asi no inu ga i-na-i.*  
          this apple TOP six leg GEN dog NOM exist-NEG-NPST  
          (lit.) ‘As for this apple, there are no six-legged dogs.’
- b. ?*Hanako wa kono mondai o tok-u kotonodeki-ru*  
          Hanako TOP this problem ACC solve-NPST be.able-NPST  
          *hito ga i-ru.*  
          person NOM exist-NPST  
          (lit.) ‘As for Hanako, there are some people who can solve this problem.’

By contrast, in the case of (67), a binding relation exists between the NP<sub>1</sub> *Berugii* ‘Belgium’ and the variable  $\alpha$  of NP<sub>2</sub> *kokuoo* ‘king’ making possible a possessive interpretation. The close relationship between (66) and (67) suggests that there is a more general correspondence existing between (72a) and (72b).<sup>13</sup>

<sup>13</sup> To say this does not imply that (72b) is syntactically or semantically derived from (72a). Indeed, there can be a significant difference in meaning between (i) and (ii).

- (i) *Kono siken dake no gookakusya ga i-ru.*  
      this examination only GEN one.who.has.passed NOM exist-NPST  
      (lit.) ‘There are those who have passed only this examination.’

- (72) a.  $NP_1$  *no*  $NP_2$  *ga i-ru/ar-u.* [ontological existential sentence]  
 b.  $NP_1$  *wa*  $NP_2$  *ga i-ru/ar-u.* [possessive sentence]

Note that the semantic relationship between  $NP_1$  and  $NP_2$  in (72a) is preserved in (72b). In the case of (66), the relationship between  $NP_1$  *Berugii* ‘Belgium’ and  $NP_2$  *kokuo* ‘king’ is of type D of the “ $NP_1$  *no*  $NP_2$ ” construction,”<sup>14</sup> discussed earlier as (5d) in section 2.

In the following examples, which are also possessive sentences because they are predication sentences whose predicates consist of ontological existential sentences, the relationship between  $NP_1$  and  $NP_2$  is likewise of type D of the “ $NP_1$  *no*  $NP_2$ ” construction. Thus, in each instance of “ $NP_1$  *no*  $NP_2$ ,” such as *ano kaisya no huku-syatyoo* ‘vice president of that company’, *Taroo no tuma* ‘Taro’s wife’, and *Tanaka no teki* ‘Tanaka’s enemy,’  $NP_2$  is an unsaturated Noun and  $NP_1$  is its parameter.

- (73) a. *Ano kaisya wa huku-syatyoo ga hutari i-ru.*  
 that company TOP vice president NOM two have-NPST  
 ‘That company has two vice presidents.’  
 b. *Taroo wa tuma ga i-ru.*  
 Taro TOP wife NOM have-NPST  
 ‘Taro has a wife.’  
 c. *Tanaka wa teki ga takusan i-ru.*  
 Tanaka TOP enemy NOM many have-NPST  
 ‘Tanaka has many enemies.’

The semantic relationship between  $NP_1$  and  $NP_2$  in possessive sentences of form (72b) is not, however, restricted to type D. Consider the following:<sup>15</sup>

- 
- (ii) *Kono siken dake wa gookakusya ga iru.*  
 this examination only TOP one.who.has.passed NOM have-NPST  
 ‘Only this examination has any who have passed.’

For discussion of this, see Nishikawa (2013a: 168-170).

**14** More accurately speaking, it is the relationship between the bound variable  $\alpha$  and  $NP_2$  *kokuo* ‘king’ that is of type D of the “ $NP_1$  *no*  $NP_2$ ” construction.

**15** We assume that a Japanese possessive sentence takes (i) as its basic form, although (ii) is also a possible variant.

- (i)  $NP_1$  *wa*  $NP_2$  *ga i-ru/ar-u.*  
 (ii)  $NP_1$  *ni(wa)*  $NP_2$  *ga i-ru/ar-u.*

- (74) *Kono heya wa mado ga hutatu ar-u.*  
 this room TOP window NOM two have-NPST  
 ‘This room has two windows.’

Note here that *mado* ‘window’ is an inalienable noun and that its base is a variable  $\alpha$ , that is bound by *kono heya* ‘this room’. The relationship between *kono heya* ‘this room’ and *mado* ‘window’ is of type F of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5f) in section 2. Now consider the following:

- (75) *Abe-sensei wa hon ga ni-satu ar-u.*  
 Abe-professor TOP book NOM two-CLF have-NPST  
 ‘Professor Abe has two books (has written two books).’

(75) is a possessive sentence where the relationship between *Abe-sensei* ‘Professor Abe’ and *hon* ‘book’ in (75) is of type A of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5a) in Section 2. Thus, the exact relationship between NP<sub>1</sub> and NP<sub>2</sub> is semantically underdetermined; what determines the relationship is a pragmatic process called “saturation.” Indeed, there is more than one interpretation available for the exact relationship between *Abe-sensei* ‘Professor Abe’ and *hon* ‘book’ in (75). These interpretations include (i) books that Professor Abe owns, (ii) books that Professor Abe is reading now, (iii) books that Professor Abe has written, (iv) books whose topic is something about Professor Abe, (v) books that Professor Abe has stolen, and so on. Thus, if (75) is uttered in a situation where Professor Abe is under review for possible promotion, it would likely be interpreted as “Professor Abe is such that he has written two books.”

It is not the case, however, that any semantic relationship whatsoever is possible between NP<sub>1</sub> and NP<sub>2</sub> in possessive sentences of form (72b). Consider the following:

- (76) a. *Byooki no gakusei ga san-nin i-ru.*  
 sickness GEN student NOM three-CLF exist-NPST  
 ‘There are three sick students.’  
 b. \**Byooki wa gakusei ga san-nin i-ru.*  
 sickness TOP student NOM three-CLF exist-NPST  
 (lit.) ‘Sickness is such that there are three students.’

(76a) is acceptable as an ontological existential sentence, with a relationship between *byooki* ‘sickness’ and *gakusei* ‘student’ of type B of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5b) in Section 2. However, a corresponding possessive sentence such as (76b) is not possible. As we argued in Section 2, *byooki* ‘sickness’ is an NP<sub>1</sub> of type B, a predicate nominal expressing a property of NP<sub>2</sub>. Predicate nominals cannot occur in the subject position of a predication sentence, so since a possessive sen-

tence is a kind of predication sentence, (76b) is not acceptable. Next consider the following:

- (77) a. *?Ano toki no Taroo ga i-ru.*  
           that time GEN Taro NOM exist-NPST  
           (lit.) ‘Taro at that time exists.’
- b. *?Ano toki wa Taroo ga i-ru.*  
           that time TOP Taro NOM exist-NPST  
           (lit.) ‘That time is such that Taro exists.’

(77a) is not acceptable as an ontological existential sentence, nor is (77b) acceptable as a corresponding possessive sentence either. The relationship between *ano toki* ‘that time’ and *Taroo* ‘Taro’ in (77) is of type C of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5c) in Section 2. Since the head noun NP<sub>2</sub> in type C of the “NP<sub>1</sub> no NP<sub>2</sub>” construction is a referential NP, it cannot function as the nominative argument of an ontological existential sentence like (77a), nor can it function as the nominative argument of a corresponding possessive sentence like (77b) either. In short, (77) is not consistent with the requirement we have proposed that the nominative argument of an ontological existential sentence or its corresponding possessive sentence, that is NP<sub>2</sub> in (72a) and (72b), must be a variable NP.

The above observations show that sentences of form “NP<sub>1</sub> wa NP<sub>2</sub> ga i-ru/ar-u” are not acceptable as possessive constructions in those cases where the relationship between NP<sub>1</sub> and NP<sub>2</sub> is either of type B or type C. Now consider the following:

- (78) a. *\*Tanaka no tootyaku ga ar-u.*  
           Tanaka GEN arrival NOM exist-NPST  
           (lit.) ‘The arrival of Tanaka exists.’
- b. *\*Tanaka wa tootyaku ga ar-u.*  
           Tanaka TOP arrival NOM exist-NPST  
           (lit.) ‘Tanaka is such that his arrival exists.’

(78a) and (78b) are not acceptable as an ontological existential sentence or as its corresponding possessive sentence, respectively. The relationship between *Tanaka* ‘Tanaka’ and *tootyaku* ‘arrival’ in (78) is in this case of type E of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5e) in Section 2. From this, one might argue that the head noun NP<sub>2</sub> in type E of the ‘NP<sub>1</sub> no NP<sub>2</sub>’ construction, which is a verbal noun, has a semantic character that is inherently inconsistent with functioning as a variable NP. However, apparent counterevidence can be found to this generalization. Consider the following:

- (79) a. *Kono resutoran no yoyaku ga oo-i.*  
 this restaurant GEN reservation NOM be.many-NPST  
 ‘There are many reservations at this restaurant.’
- b. *Kono resutoran wa yoyaku ga oo-i.*  
 this restaurant TOP reservation NOM be.many-NPST  
 ‘This restaurant has many reservations.’

(79a) and (79b) are acceptable as an ontological existential sentences and its corresponding possessive sentence, respectively, even though (79b) is a possessive sentence of form “NP<sub>1</sub> wa NP<sub>2</sub> ga i-ru/ar-u” where the relationship between NP<sub>1</sub> and NP<sub>2</sub> is of type E. Relationships of type E thus appear to be possible in such constructions, although this leaves the case of (78) as a problem that must be addressed.

Consider finally the following:

- (80) a. *Hanako ga rikon-si-ta riyuu ga hutatu ar-u.*  
 Hanako NOM get.divorced-do-PST reason NOM two exist-NPST  
 ‘There are two reasons why Hanako got divorced.’
- b. *Hanako ga rikon-si-ta no ni wa riyuu ga hutatu ar-u.*  
 Hanako NOM get.divorced-do-PST COMP DAT TOP reason NOM  
 two exist-NPST  
 ‘There are two reasons for Hanako having gotten divorced.’

(80a) is acceptable as an ontological existential sentence, and (80b) is also acceptable as its corresponding possessive sentence. Note that the relationship between *Hanako ga rikon-si-ta* ‘Hanako got divorced’ and *riyuu* ‘reason’ in (80a) is a case of [parameter clause + unsaturated noun], discussed earlier as an extended case of type D of the [NP<sub>1</sub>+GEN+NP<sub>2</sub>] construction in Section 2.2. Essentially the same relationship is preserved in (80b): the clause *Hanako ga rikon-si-ta* ‘Hanako got divorced’ functions as a parameter clause for *riyuu* ‘reason’ in (80b).

Recall that cases of clausal noun modification in Japanese, where a noun is modified by a sentence, include instances of gapless modifying clauses and that gapless modifying clauses can in turn be further divided into at least three subtypes: (i) content clauses (ii) perception-describing clauses and (iii) parameter clauses. As we observed earlier, if the relationship between NP<sub>1</sub> and NP<sub>2</sub> is that between a parameter clause and an unsaturated noun, then it is possible to construct a corresponding possessive sentence such as (80b). On the other hand, if the relationship is one between a content clause and its head noun or between a perception-describing clause and its head noun, the corresponding possessive sentence is low in acceptability, as shown in (81) and (82).

- (81) a. ?*Sakana o yak-u nioi ga ar-u.*  
 fish ACC grill-NPST smell NOM exist-NPST  
 ‘There is a smell of (someone) grilling fish.’
- b. \**Sakana o yak-u no ni wa nioi ga ar-u.*  
 fish ACC grill-NPST COMP DAT TOP smell NOM  
 exist-NPST  
 (lit.) ‘For grilling fish there is a smell.’
- (82) a. ?*Senaka o muti de ut-are-ru batu ga huta-tu ar-u.*  
 back ACC whip INS beat-PASS-NPST punishment NOM  
 two-CLF exist-NPST  
 ‘(lit.) Two punishments exist where one is beaten on the back with a whip.’
- b. ?*Senaka o muti de ut-are-ru no ni wa batu ga huta-tu ar-u.*  
 back ACC whip INS beat-PASS-NPST COMP DAT TOP  
 punishment NOM two-CLF exist-NPST  
 (lit.) ‘For being beaten on the back with a whip there are two punishments.’

The observations above suggest an additional constraint on possible possessive constructions: for a sentence of form “NP<sub>1</sub> *wa* NP<sub>2</sub> *ga i-ru/ar-u*” to be interpreted as a possessive construction, the relationship between NP<sub>1</sub> and NP<sub>2</sub> may be any of type A, type D, type E, Type F, or [(nominalized) parameter clause + unsaturated NP]. In sum, a possessive construction “NP<sub>1</sub> *wa* NP<sub>2</sub> *ga i-ru/ar-u*” must satisfy the following conditions:

- (83) a. A possessive construction is a predication copular sentence: some property expressed by ‘NP<sub>2</sub> *ga i-ru/ar-u*’ is ascribed to the referent of NP<sub>1</sub>.
- b. ‘NP<sub>2</sub> *ga i-ru/ar-u*’ is an ontological existential construction.
- c. NP<sub>1</sub> is a referential NP.
- d. NP<sub>2</sub> is a variable NP.
- e. There is a binding relation between NP<sub>1</sub> and the variable  $\alpha$  of NP<sub>2</sub>.
- f. The relationship between NP<sub>1</sub> and NP<sub>2</sub> is one of type A, type D, type E, Type F, or [(nominalized) parameter clause + unsaturated NP], but cannot be of type B or type C.



Both perspectives on the semantics of NPs, i.e., (i) their intrinsic meaning and (ii) their semantic function in a sentence, must be taken into consideration in arriving at the conditions above. An approach that takes both into account is therefore crucial for a proper analysis of the semantics of Japanese possessive constructions.

## 4.2 The *zoo-hana* construction

This subsection is concerned with showing that double subject copular constructions of a certain type taking the form “A *wa* B *ga* C (*da*)” can only be properly analyzed when both the semantics of “NP<sub>1</sub> *no* NP<sub>2</sub>” and the semantic functions of NPs in the construction are taken into account. The discussion here will serve to further highlight the significant role played by interactions between the various types of noun modification and the semantic function performed by NPs within a general theory of noun semantics in Japanese. Consider first the following example:

- (84)      *Zoo*        *wa*        *hana*    *ga*        *naga-i*.  
           elephant TOP nose NOM be.long-NPST  
           (lit.) ‘An elephant is such that its nose is long (elephants have long noses).’

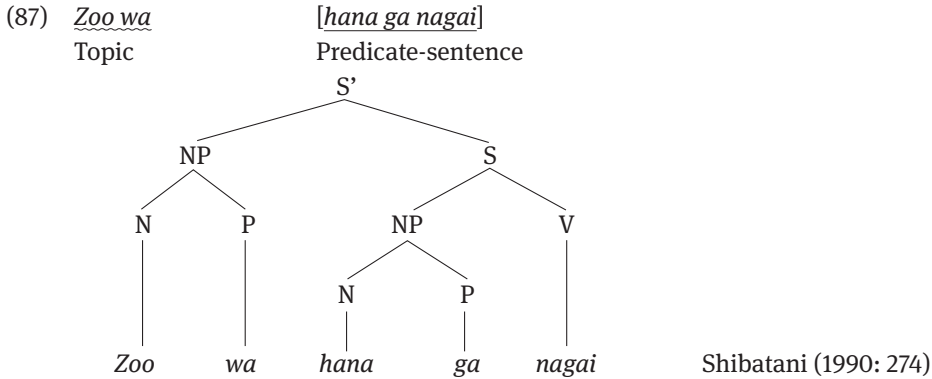
(84) is one of the most widely discussed sentences in Japanese linguistics (cf. Mikami 1953, 1960; Shibatani 1978, 1990; Noda 1996). In most previous discussions, it has been assumed that (84) is connected in some way with (85).

- (85)      *Zoo*        *no*        *hana*    *ga*        *naga-i*.  
           elephant GEN nose NOM be.long-NPST  
           (lit.) ‘The elephant’s nose is long.’

Along these lines, Mikami (1953, 1960) claims that (84) is derived from (85) by means of “topicalization” of *zoo no* in (85). In contrast, Shibatani (1978: 208-209) assumes that the underlying structure of (84) is something like (86a) and that (86b) is derived by applying a rule of equi-NP deletion to *zoo* in the Predicate of (86a).

- (86) a.    *Zoo<sub>i</sub>*    *wa*                    [*zoo<sub>i</sub>*    *no hana ga nagai*]  
           Topic                            Predicate  
       b.    *Zoo<sub>i</sub>*    *wa*                    [*e<sub>i</sub>*        *no hana ga nagai*]  
           Topic                            Predicate

On the other hand, in more recent work Shibatani (1990: 274-275) assumes that the underlying structure of (84) is (87).



According to Shibatani (1990: 274), this is a special case of the topic-comment construction in Japanese where the NP dominated by S', i.e., *zoo wa* is a topic and the S, i.e., [*hana ga nagai*] is a comment or predicate about the topic. Note here that [*hana ga nagai*] in (87) is a complete sentence in the sense that it contains no missing noun arguments. In spite of this, Shibatani claims that it functions as a predicate of the subject NP *zoo* 'elephant,' something made possible by a relationship of "aboutness" existing between the topic "A *wa*" and the comment [B *ga* C (*da*)] that must be met as a condition for this construction to be licensed. Shibatani suggests that the subject of the predicate portion, *hana* 'nose' is something intimately related to the topic *zoo* 'elephant,' the two existing in a part-to-whole relationship that satisfies such an "aboutness condition." In general, on Shibatani's view, the "A *wa* B *ga* C (*da*)" construction can be licensed as a topic-comment construction even if "B *ga* C (*da*)" itself is a complete sentence. Shibatani (1990: 274-275) analyzes (88) in a similar way.

- (88) *Sakana wa tai ga itiban i-i.*  
 fish TOP sea.bream NOM number.one be.good-NPST  
 'As for fish, sea bream is the best.'

According to Shibatani, the "aboutness condition" on the relationship between A and [B *ga* C (*da*)] in the "A *wa* B *ga* C (*da*)" construction is satisfied in (88), because of the relationship of inclusion that exists between *tai* 'sea bream' and *sakana* 'fish.'

Shibatani's analysis, however, encounters certain difficulties. First of all, the nature of the relationship between the topic A and the comment "B *ga* C (*da*)" in an "A *wa* B *ga* C (*da*)" construction that is necessary to fulfill the "aboutness condition" is not clearly defined. In particular, is this a semantic concept or a pragmatic one? The part-to-whole relationship existing between *hana* 'nose' and *zoo* 'elephant' in (84) and the "inclusion relationship" existing between *tai* 'sea bream' and *sakana* 'fish' in (88) are in fact quite different from each other. How then would this condition account for a topic-comment construction such as (89)?

- (89) *Tanaka-sensei wa hon ga muzukasi-i.*  
 Tanaka-professor TOP book NOM be.difficult-NPST  
 (lit.) ‘Professor Tanaka is such that his book is difficult.’

(89) is a topic-comment construction where a complete sentence makes up the predicate portion, although the exact relationship between *Tanaka-sensei* ‘Professor Tanaka’ and *hon* ‘book’ is not semantically but only pragmatically determined. Thus, (89) can be interpreted in any of the various senses in (90), given an appropriate context, though (90d) may be the pragmatically most natural interpretation in most contexts.

- (90) a. Professor Tanaka is such that the book which he is now reading is difficult.  
 b. Professor Tanaka is such that the book which he has bought is difficult.  
 c. Professor Tanaka is such that the book which he is now reviewing is difficult.  
 d. Professor Tanaka is such that the book which he has written is difficult to read.

These observations suggest that the relationship between A and B in the “A *wa* B *ga* C (*da*)” construction understood as a topic-comment construction is not purely semantic in nature but is to a large extent pragmatically determined. To say this, however, does not imply that, as long as some semantic or pragmatic relationship obtains between A and B, any complete sentence “B *ga* C (*da*)” can function as a predicate of A. Consider the following:

- (91) *?Taro wa Hanako ga byooki da.*  
 Taro TOP Hanako NOM sick COP.NPST  
 (lit.) ‘Taro is such that Hanako is sick.’

(91) is grammatical and acceptable in certain contexts. Whereas *hana ga nagai* ‘nose is long’ in (84) can function as a predicate of the subject NP *zoo* ‘elephant’, however, *Hanako ga byooki da* ‘Hanako is sick’ in (91) could not be regarded as a predicate of the subject NP *Taro* ‘Taro’ in the same sense, even if it were well known that Hanako is Taro’s daughter. This points to the need to more explicitly define the notion of “aboutness condition,” which as it stands requires no more than that some semantic or pragmatic relationship exist between the topic and comment.

There is another difficulty that Shibatani’s analysis of (84) and (88) encounters. Though (88) appears to parallel (84) structurally, there is good reason to believe that (88) is not formed in the same way as (84). That is because *tai ga itiban ii* ‘sea bream is

the best' in (88) cannot be construed in any meaningful sense as a predicate of *sakana* 'fish'. In fact, (88) could not be a topic-comment construction at all, because it would be nonsensical to say of *sakana* 'fish' that it has the property that *tai ga itiban ii* 'sea bream is the best'. The distinction can be appreciated by comparing (88) and (92):

- (88) *Sakana wa tai ga itiban i-i.*  
 fish TOP sea.bream NOM number.one be.good-NPST  
 'As for fish, sea bream is the best.'

- (92) *Sakana wa sippo ga itiban i-i.*  
 fish TOP tail NOM number.one be.good-NPST  
 (lit.) 'Fish is such that its tail part is the best.'

As the English gloss indicates, (92) is translatable as 'Fish is such that ...', but it is not possible to render (88) in a parallel way as 'Fish is such that sea bream is the best,' suggesting that (92) is a topic-comment construction like (84), whereas (88) is not. Rather, (88) is better regarded as a simple specificational sentence uttered in response to a specificational question such as (93).

- (93) *Sakana no naka de itiban i-i no wa*  
 fish GEN midst LOC number.one be.good-NPST COMP top  
*dore des-u ka.*  
 which COP.POL-NPST Q  
 'Among fish, which is the best?'

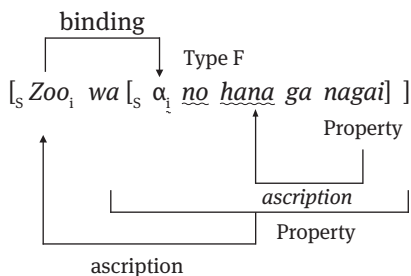
Thus, sentence (88) as a whole provides the answer to this *wh*-question, specifically, that the answer is *tai* 'sea bream'. As such, the subject NP *sakana* 'fish' in (88) functions to indicate a possible range of values from which a value is chosen to fulfill the variable *x* in the open proposition [*x* is *itiban ii*] in such a way as to make the proposition true. Therefore, *sakana* 'fish' in (88) cannot be construed as the topic of the sentence, contrary to Shibatani's view.

Nishiyama (2003: 241-246) argues, contra Shibatani, that *hana ga nagai* 'nose is long' in (84) is not a complete sentence but an open sentence insofar as it functions as a predicate of the subject NP *zoo* 'elephant.' Nishikawa (2013a) clarifies this point, proposing a more explicit analysis of (84) as a double copular sentence in the sense that the main sentence is a predication sentence whose property is itself expressed in another predication sentence (94).

- (94) *Hana wa naga-i.*  
 nose TOP be.long-NPST  
 '(Its) nose is long.'

Since (94) is itself a predication sentence, its subject NP *hana* ‘nose’ is marked by *wa*. However, since (94) is embedded in the predicate position of (84), *wa* is replaced by *ga* in (84).<sup>16</sup> The overall semantic structure of (84) can thus be represented as in (95).

(95)



*Hana* ‘nose’ is here an inalienable noun and its base is a variable  $\alpha$ , which is bound by *zoo* ‘elephant,’ as represented by the index “<sub>i</sub>.” The relationship between *zoo* ‘elephant’ and *hana* ‘nose’ is of type F of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5f) in section 2. Nishikawa’s analysis of (84) is different from Shibatani’s in the sense that (84) is analyzed as a double predication sentence and that the embedded predication sentence [*hana ga nagai*] contains a variable  $\alpha$ , which is bound by the main subject *zoo* ‘elephant.’

(96) is another such example of a double predication sentence.

- (96) *Kono heya wa tenzyoo ga taka-i.*  
 this room TOP ceiling NOM be.high-NPST  
 (lit.) ‘This room is such that its ceiling is high.’

The relationship between *kono heya* ‘this room’ and *tenzyoo* ‘ceiling’ in (96) is likewise an example of type F of the “NP<sub>1</sub> no NP<sub>2</sub>” construction.

<sup>16</sup> It is well known that *wa* is replaced by *ga* in embedded contexts. For instance, (i) is a *wa*-copular, predication sentence. When (i) is embedded in (ii), *wa* is turned into *ga*. Nevertheless, the embedded sentence [*Hanako ga byooki (da)*] in (ii) maintains its character as a predication sentence.

- (i) *Hanako wa byooki da.*  
 Hanako TOP sick COP.NPST  
 ‘Hanako is sick.’

- (ii) *Mosi Hanako ga byooki nara boku ga ik-u yo.*  
 if Hanako NOM sick COP.COND I NOM go-NPST SP  
 ‘If Hanako is sick, then I will go.’

Now consider the following:

- (97) a. *Ano kaisya wa syatyoo ga zyosei da.*  
           that company TOP president NOM female COP.NPST  
           (lit.) ‘That company is such that its president is female.’
- b. *Hanako wa musuko ga gaka da.*  
       Hanako TOP son NOM painter COP.NPST  
       (lit.) ‘Hanako is such that her son is a painter.’

These are also double predication sentences in that they are predication sentences whose predicates consist of other predication sentences. It should be noted, however, that the relationship between A and B in each of the “A wa B ga C (da)” constructions above is of type D of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5d) in Section 2. An instance of this is *syatyoo* in (97a), an unsaturated noun with *ano kaisya* as its parameter.

Now consider the following:

- (98) *Tiizu wa syooka ga yo-i.*  
       cheese TOP digestion NOM be.good-NPST  
       ‘Cheese is easy to digest.’

(98) is also a double predication sentence. However, the relationship between A and B in the “A wa B ga C (da)” construction here, that is, the relationship between *tiizu* ‘cheese’ and *syooka* ‘digestion’ is of type E of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5e) in Section 2.

Finally consider the following:

- (99) *Taroo wa nekutai ga itaria-sei da.*  
       Taro TOP necktie NOM Italian-made COP.NPST  
       (lit.) ‘Taro is such that his necktie is Italian.’

(99) is also a double predication sentence, but the relationship here between A and B in the “A wa B ga C (da)” construction, that is, the relationship between *Taroo* ‘Taro’ and *nekutai* ‘necktie’ in (99) is of type A of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, where the relationship between NP<sub>1</sub> and NP<sub>2</sub> is pragmatically determined.

Let us call the type of double predication sentence we have been discussing the “Zoo-hana construction.” In “A wa B ga C (da)” constructions of the “Zoo-hana” type, the relationship between NP<sub>1</sub> (A) and NP<sub>2</sub> (B) may be any of type A, type D, type E, or Type F. Both A and B are, furthermore, referential NPs, whereas C is a property expression in the form of a predicate nominal, an adjective, or an adjectival noun.

Recall that *byooki no zyookyaku* ‘sick passenger’ is of type B of the “NP<sub>1</sub> no NP<sub>2</sub>” construction, discussed earlier as (5b) in Section 2, and that *ano toki-no Taroo* ‘Taro at

that time’ is of type C of this construction, discussed earlier as (5c) in Section 2. Now consider the following “A *wa* B *ga* C (*da*)” constructions:

- (100) a. \**Byooki wa zyookyaku ga nihonzin da.*  
 sickness passenger NOM Japanese COP:NPST  
 (lit.) ‘Sickness is such that the passengers are Japanese.’
- b. ?*Ano toki wa Taroo ga kintyoo-si-tei-ta.*  
 that time TOP Taro NOM become.nervous-do-RES-PST  
 (lit.) ‘That time is such that Taro was nervous.’

(100a) does not make sense, and (100b) is odd insofar as it is understood as a predication sentence. This shows that in “A *wa* B *ga* C (*da*)” constructions of the “*Zoo-hana*” type, the relationship between A and B can be of neither type B nor type C. Summarizing the above observations, the “A *wa* B *ga* C (*da*)” construction of the “*Zoo-hana*” type can be described as one satisfying the following conditions:

- (101) a. The “A *wa* B *ga* C (*da*)” construction of the *zoo-hana* type is a double copular sentence in the sense that the main sentence is a predication sentence whose property is itself expressed by another predication sentence “B *wa* C (*da*).”
- b. Both A and B are referential NPs.
- c. C is a property expression such as a predicate nominal, an adjective, or an adjectival noun.
- d. Some property expressed by C is ascribed to the referent of B.
- e. Some property expressed by “B *wa* C (*da*)” is ascribed to the referent of A.
- f. The relationship between NP<sub>1</sub>(A) and NP<sub>2</sub>(B) is of either type A, type D, type E, or Type F, but it can not be of type B or type C.

As seen in this conditions, the semantic function of nouns or NPs is crucial to a proper understanding of the meaning of the “*zoo-hana*” construction.

### 4.3 The *kaki-ryoori* construction

Consider next examples of the following type:

- (102) a. *Hirosima ga kaki-ryoori no honba da.*  
 Hiroshima NOM oyster-cuisine GEN mecca COP.NPST  
 ‘It is Hiroshima that is the mecca of oyster cuisine.’

- b. *Kaki-ryoori wa Hiroshima ga honba da.*  
 oyster-cuisine TOP Hiroshima NOM mecca COP.NPST  
 (lit.) ‘Oyster cuisine is such that Hiroshima is its mecca.’

(102a), which takes the form “B *ga* A *no* C *da*,” is a specificational sentence where *kaki-ryoori no honba* ‘the mecca of oyster cuisine’ is a variable NP and *Hiroshima* specifies its value. From (102a) it is possible to construct (102b), which takes the form “A *wa* B *ga* C *da*.” Despite taking a form similar to that of a “*zoo-hana*” construction, however, (102b) is not a “*zoo-hana*” construction, but is rather a predication sentence ascribing a certain property to *kaki-ryoori* ‘oyster cuisine.’ This property is itself expressed in the form of a specificational sentence like (103).

- (103) *Hiroshima ga honba da.*  
 Hiroshima NOM mecca COP.NPST  
 ‘It is Hiroshima that is the mecca.’

A similar correspondence between “B *ga* A *no* C *da*” and “A *wa* B *ga* C *da*” can be seen in the following pairs:

- (104) a. *Aomori ga Taroo no kokyoo da.*  
 Aomori NOM Taro GEN hometown COP.NPST  
 ‘It is Aomori that is Taro’s hometown.’  
 b. *Taroo wa Aomori ga kokyoo da.*  
 Taro TOP Aomori NOM hometown COP.NPST  
 ‘Taro is such that Aomori is his hometown.’
- (105) a. *Suzuki-sensei ga Hanako no sidoo-kyoozyu da.*  
 Suzuki-professor NOM Hanako GEN adviser COP.NPST  
 ‘It is Professor Suzuki that is Hanako’s academic adviser.’  
 b. *Hanako wa Suzuki-sensei ga sidoo-kyoozyu da.*  
 Hanako TOP Suzuki-professor NOM adviser COP.NPST  
 (lit.) ‘Hanako is such that Professor Suzuki is her academic adviser.’

“A *wa* B *ga* C *da*” constructions exhibiting a correspondence between the (a) and (b) examples in (102), (104), and (105) have been called “*kaki-ryoori* constructions.” It is not the case, however, that a *kaki-ryoori* construction “A *wa* B *ga* C *da*” can be constructed from any specificational sentence “B *ga* A *no* C *da*” whatsoever. Consider the following example pair:



- (106) a. *Kore ga Hanako no hon da.*  
 this NOM Hanako GEN book COP.NPST  
 ‘It is this that is Hanako’s book.’
- b. ?*Hanako wa kore ga hon da.*  
 Hanako TOP this NOM book COP.NPST  
 (lit.) ‘Hanako is such that this is her book.’

(106a), which has a form “B *ga* A *no* C *da*,” is a specificational sentence where *Hanako no hon* ‘Hanako’s book’ is a variable NP and *kore* ‘this’ specifies its value. Nevertheless, we cannot construct (106b), taking the form “A *wa* B *ga* C *da*,” from (106a). (106b) is in fact an unacceptable sentence, in contrast to (106a). Similarly, (107b) and (108b) cannot be straightforwardly constructed from (107a) and (108a), respectively.

- (107) a. *Kore ga ano heya no mado da.*  
 this NOM that room GEN window COP.NPST  
 ‘It is this that is the window to that room.’
- b. ?*Ano heya wa kore ga mado da.*  
 that room TOP this NOM window COP.NPST  
 (lit.) ‘That room is such that this is the window.’
- (108) a. *Kore ga syatyoo no meirei da.*  
 this NOM company.president GEN order COP.NPST  
 ‘It is this that is the order of the company president.’
- b. ?*Syatyoo wa kore ga meirei da.*  
 company.president TOP this NOM order COP.NPST  
 (lit.) ‘The president of the company is such that this is his order.’

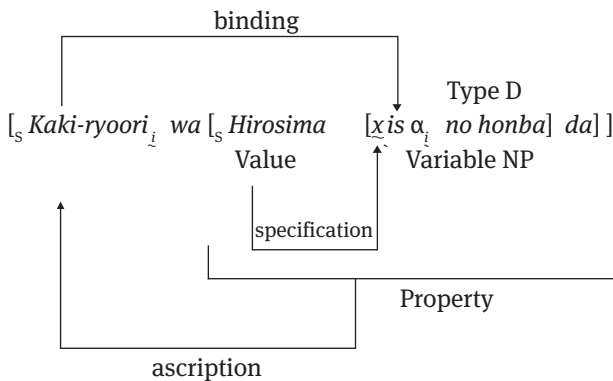
Both (107a) and (108a) are fully acceptable, whereas (107b) and (108b) are not. What accounts for this difference between (102b), (104b), and (105b), on the one hand, and (106b), (107b), and (108b), on the other? This has been a controversial issue in Japanese linguistics (see Noda 1981, Nishiyama 1990, and Kikuchi 1997). Nishiyama (2003) proposes the following as conditions necessary for constructing a *kaki-ryoori* construction of form “A *wa* B *ga* C *da*” corresponding to a specificational sentence of form “B *ga* A *no* C *da*.”

- (109) a. “A *wa* B *ga* C *da*” is a predication sentence where A is a referential NP and “B *ga* C *da*” expresses a property ascribed to it.
- b. “B *ga* C *da*” is a specificational sentence where C is a non-referential variable NP and B provides the value for the variable in C.
- c. The relationship between A and C is of the type “parameter-unsaturated noun,” i.e., that of a type D “NP<sub>1</sub> *no* NP<sub>2</sub>” construction.

The crucial condition here is (109c), which can distinguish well-formed *kaki-ryoori* constructions such as (102b), (104b), and (105b) from ill-formed ones such as (106b), (107b), and (108b). Indeed, *honba* ‘mecca’ is an unsaturated noun and *kaki-ryoori* ‘oyster cuisine’ is its parameter in (102). Similarly, *kokyoo* ‘hometown’ is an unsaturated noun and *Taroo* is its parameter in (104), and *sidoo-kyoozyu* ‘adviser’ is an unsaturated noun and *Hanako* is its parameter in (105). In sum, the relationship between A and C in each of (102b), (104b), and (105b) is that of a type D “NP<sub>1</sub> no NP<sub>2</sub>” construction. By contrast, the relationship between A and C in each of (106b), (107b), and (108b) is of some other type than type D. For example, *Hanako no hon* ‘Hanako’s book’ in (106b) is of type A, *ano heya no mado* ‘window of that room’ in (107b) is of type F, and *syatyoo no meirei* ‘the order of the company president’ in (108b) is of type E. Recall from Section 2.1 that inalienable nouns must be distinguished from unsaturated nouns. The fact that (107b) is less acceptable shows that the grammaticality of the *kaki-ryoori* construction is sensitive to the distinction between unsaturated nouns and inalienable nouns.

Based on the above, the semantic structure of the *kaki-ryoori* construction “A wa B ga C da” may be represented as in (110).

(110)



The analysis we propose here of nominal meaning is able to shed new light on the character and structure of the *kaki-ryoori* construction by clarifying the significant interaction that occurs between type D meaning in the “NP<sub>1</sub> no NP<sub>2</sub>” construction and semantic functions such as referential NP, variable NP, and value NP performed by A, B, and C in “A wa B ga C da” sentences of the *kaki-ryoori* type. We stress again that the semantic functions of the kind we have proposed in nouns or NPs is crucial to understanding and properly analyzing the meaning of fundamental Japanese construction types such as the *kaki-ryoori* construction.

We noted in Section 2.1 that unsaturated nouns must be distinguished from saturated nouns and in Section 2.2 also pointed out that certain unsaturated nouns take modifying clauses as their parameter. In this connection, recall example (111) as a

special type of gapless clausal noun modification taking the form [parameter clause + unsaturated NP].

- (111) *Hanako ga rikon-si-ta riyuu* (=23b)  
 Hanako NOM get.divorced-do-PST reason  
 ‘the reason why Hanako got a divorce’

We have argued that a head NP such as *riyuu* ‘reason’ in (111) is an unsaturated noun and its modifying clause *Hanako ga rikon-sita* ‘Hanako got a divorce’ is its parameter. Now consider the following:

- (112) *Otto no booryoku ga Hanako ga rikon-si-ta riyuu*  
 husband GEN violence NOM Hanako NOM get.divorced-do-PST reason  
*da.*  
 COP.NPST  
 ‘Her husband’s violent behavior is the reason why Hanako got divorced.’

(112) is a specificational sentence where *Hanako ga rikon-sita riyuu* ‘the reason why Hanako got divorced’ is a variable NP for which *otto no booryoku* ‘her husband’s violent behavior’ specifies the value. As pointed out by Nishikawa (2013b), from a specificational sentence like (112), it is possible to construct (113), a variety of *kaki-ryoori* construction.

- (113) *Hanako ga rikon-sita no wa otto no booryoku*  
 Hanako NOM get.divorced-PST COMP TOP husband GEN violence  
*ga riyuu da.*  
 NOM reason COP.NPST  
 (lit.) ‘Hanako’s divorce is such that her husband’s violent behavior is its reason.’

Nishikawa terms a sentence like (113) a ‘semi-*kaki-ryoori* construction’. Note that the head NP *riyuu* ‘reason’ in (113) is an unsaturated noun for which the modifying clause *Hanako ga rikon-sita* ‘Hanako got divorced’ provides the parameter. By way of contrast, consider the following:

- (114) *Kore ga Hanako ga yon-dei-ru hon da.*  
 this NOM Hanako NOM read-PROG-NPST book COP.NPST  
 (lit.) ‘It is this that is the book that Hanako is reading.’

Here again, (114) is a specificational sentence where *Hanako ga yon-dei-ru hon* ‘the book which Hanako is reading’ is a variable NP for which *kore* ‘this’ specifies the value. Nevertheless, in this case it is not possible to construct from (114) a semi-*ka-ki-ryoori* construction such as (115).

- (115) \**Hanako ga yon-dei-ru no wa kore ga hon*  
 Hanako NOM read-PROG-NPST COMP TOP this NOM book  
*da.*  
 COP.NPST  
 (lit.) ‘What Hanako is reading is such that it is this that is the book’

Indeed (115) is ill-formed as a *kaki-ryoori* construction, despite having the form “A wa B ga C da.” Note that *hon* is not an unsaturated noun and that there is no “parameter-to-unsaturated noun” relationship between *Hanako ga yon-dei-ru* ‘what Hanako is reading’ and *hon* ‘book’. The relationship between head noun and modifying clause in (115) is in fact an example of Teramura’s *uti no kankei* ‘inner relationship,’ in contrast to (113), where the relationship between the modifying clause *Hanako ga rikon-sita* ‘Hanako got a divorce’ and the head noun *riyuu* ‘reason’ is that of a clausal parameter and unsaturated noun, exemplifying Teramura’s *soto no kankei* ‘outer relationship.’ Here, a significant interaction can be observed between certain types of gapless clausal NP modification, i.e., those exhibiting a *soto no kankei* ‘outer relationship,’ and semantic functions such as referential NP, variable NP, and value NP in A, B, and C in “A wa B ga C (da)” constructions of the *kaki-ryoori* type. In sum, the framework of analysis we propose, one that takes into account both the inherent meaning and semantic function of nouns relative to their grammatical position provides precisely the constraints necessary to accurately delimit the range of possible *kaki-ryoori* constructions.

## 5 Conclusion

We began this chapter with a discussion of the intrinsic meaning of NPs with special reference to both “NP<sub>1</sub> no NP<sub>2</sub>” constructions and clausal NP modification constructions of various types. In the context of that discussion, concepts such as saturated noun, unsaturated noun, parameter, inalienable noun, and base expression were introduced. We next argued that the same NP can have differing semantic functions depending on its grammatical position in a copular sentence and sentential constructions of other types, such as referential NP, property NP, variable NP, and value NP. We pointed out that the distinction between referential and variable NPs is particularly significant for the role it plays in contributing to the ambiguity of various sentence types. Finally, we considered the significance of the interaction between the intrinsic meaning of NPs and the semantic functions they perform in a given sentence, an accurate understanding of which requires that NPs be seen from two perspectives, that of (i) their intrinsic meaning and (ii) their semantic functions within a sentence. We hope to have shown the wide-ranging implications that adopting such a dual perspective has for improving our understanding of the semantic structure of nouns and

NPs in various Japanese constructions and, as a result, of the overall structure of Japanese in general.

Furthermore, a proper understanding of noun semantics in Japanese could pose a challenge to general linguistic theories. In Chomsky (1995) and subsequent works it is suggested that the current Minimalist Program assumes that the sources of a semantic representation (SEM) are (i) the semantic features of the lexical items and (ii) the hierarchical structure of linguistic objects recursively constructed by MERGE on top of lexical items. However, can (i) and (ii) adequately account for the ambiguities of copular sentences such as (43), which has both a predicational reading and an inverted specificational reading? If our analysis is correct, the ambiguities cannot be attributed to (i), since the intrinsic meanings of the NPs are constant in both readings. Then, is (ii) responsible for the ambiguities of copular sentences? Recall that the different meanings for (43) are due to the differences in semantic functions of NPs (referential NP, variable NP, and property NP). There is no obvious explanation for semantic functions using the concept of MERGE. If (i) and (ii) fail to explain the ambiguities, then another source of meaning that is sensitive to the semantic functions of NPs appears to be necessary. Providing an adequate explanation of such semantic functions in NPs thus has significant implications for general linguistic theory, going beyond providing an account of the Japanese data alone that we have considered.

## Additional abbreviations

ANM – animate, GOAL – goal, INAN – inanimate, NPST – nonpast

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## II Proposition-level semantics





Wesley M. Jacobsen

### 3 Toward an empirical foundation for argument structure in Japanese, a prodrop language

#### 1 Introduction

Basic to the interface of form and meaning in natural language is the way a linguistic form selects other linguistic forms that are either required or allowed to co-occur with it in the same clause. Verbs and other predicates, in particular, require the presence of one or more noun (nominal) phrases that are put into a relationship with the predicate, and with one another, in a way uniquely determined by the meaning of the predicate and without which the meaning of the predicate cannot be coherently interpreted. The pattern formed by those noun phrases is what is called argument structure, a concept arising from predicate logic according to which predicates can be categorized by the number of noun phrase (“argument”) slots (“places”) that must be filled to make sense of the predicate. By this measure, the verb *occur* is a one-place predicate requiring only one nominal argument slot to be filled, *throw* is a two-place predicate, and *return* a three-place predicate, as shown in (1) using *x*, *y*, and *z* to indicate the nominal argument slots that must be filled, with examples from English, and in (2) with corresponding examples from Japanese.

- (1) a. *occur* (*x*)      An earthquake occurred.  
b. *throw* (*x*, *y*)      The pitcher threw the ball.  
c. *return* (*x*, *y*, *z*)      Ken returned the book to his friend.
- (2) a. *okoru* (*x-ga*)      *Zisin*      *ga*      *okot-ta*      (*<okor-ta*).  
                                 earthquake      NOM      occur-PST
- b. *nageru* (*x-ga*, *y-o*)      *Toosyu ga*      *booru o*      *nage-ta*.  
                                 pitcher      NOM      ball      ACC      throw-PST
- c. *kaesu* (*x-ga*, *z-ni*, *y-o*)      *Ken ga*      *tomodati ni*      *hon o*  
                                 Ken      NOM      friend      DAT      book      ACC  
*kaesi-ta*.  
return-PST

The number and type of arguments taken by a predicate is, by definition, closely tied to its meaning, so it is not surprising that predicates of corresponding meaning in Japanese and English will exhibit the same number and type of arguments. As can be seen in (1) and (2), however, the way these arguments are realized on the surface differs by virtue of different constraints placed on each language by its syntax. Generally speaking, English syntax relies heavily on word order, either pre-verbal or post-verbal, in the assignment of central grammatical roles such as subject and object to arguments, augmented by the use of prepositional marking (e.g., ‘to his friend’ in (1c)) for less central grammatical roles, whereas Japanese consistently relies on case markers such as nominative *ga*, accusative *o*, and dative *ni* for assigning grammatical roles of any kind to arguments. There are competing views among linguists as to whether argument structure is something that is fundamentally determined by word meaning, so that the semantics of a lexical form “projects” a given argument structure (Grimshaw 1990, Hale and Keyser 2002, Levin and Rappaport Hovav 2005), or whether argument structure is something determined independently by the syntax of a language (Åfarli 2007). The view we take in this chapter is that the number and types of arguments taken by a predicate is fundamentally determined by its meaning, but that these are constrained in their realization to a fixed set of patterns imposed by the syntax, in the case of Japanese a tightly limited group of case marking collocations, including the patterns *x-ga*, *x-ga y-o*, and *x-ga z-ni y-o* illustrated in (2).

Much attention has been paid in the formal syntactic literature to patterns of structural hierarchy in the syntactic realization of arguments,<sup>1</sup> but surprisingly little attention has been paid to the basic question of what constitutes an argument to begin with, under the assumption that what is or is not an argument is self-evident given native intuition as to the meaning of a predicate. It is commonly understood that not every type of noun phrase that a predicate selects (“subcategorizes”) for possible co-occurrence with it in the same clause qualifies as an argument obligatory to the meaning of a predicate, but that certain noun phrase types may be optionally selected for co-occurrence, constituting what are known as “adjuncts.” In (3), for example, of the entire range of noun phrases appearing in the Japanese sentence and, correspondingly, its English counterpart, only *Aki ga* ‘Aki NOM’ and *bangohan o* ‘supper ACC’ are considered obligatory for a coherent interpretation of the predicate *tabe-ta* ‘eat-PST,’ all other nominal constituents constituting adjuncts, whether case-marked as in Japanese or marked prepositionally as in English.

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<sup>1</sup> For an overview of basic theoretical issues in the syntactic realization of arguments and a discussion of select syntactic phenomena in Japanese that have particular relevance to such theoretical issues, see Tsujimura (2017).

- (3) *Aki ga sensyuu no doyoobi ni tikaku no resutoran*  
 Aki NOM last.week GEN Saturday TMP nearby GEN restaurant  
*de tomodati to issyo-ni bangohan o tabe-ta.*  
 LOC friend COM together supper ACC eat-PST  
 'Aki ate supper last Saturday with a friend at a nearby restaurant.'

This distinction has nevertheless been one based largely on introspective intuition, without an objectively clear basis for the distinction. The need for an objective test to distinguish arguments from non-arguments is particularly crucial in the case of a prodrop language such as Japanese, where, as we shall see shortly, arguments are commonly omitted with no observable trace on the surface.

The primary goal of this chapter is to provide a firmer empirical foundation for the notion of argument structure in the form of an objective test for determining which of the noun phrase(s) that may co-occur with a predicate constitute obligatory arguments and which do not. Such a test is proposed in Section 3 of this chapter, and Sections 4 and 5 explore the implications this test has for certain traditionally accepted notions regarding argument status. Leading up to that discussion, we show first in Section 2 how argument structure constitutes an invisible structure that forms part of the native speaker's lexical knowledge of each predicate in the Japanese language, one that plays an indispensable role in the processes of both language comprehension and language production in naturally occurring discourse. Section 6 will consider implications that the test introduced in Section 3 has for the long-standing debate within the native Japanese grammatical tradition regarding the role of subject in the grammar of Japanese. Section 6 considers, in light of this test, some representative morphological verb affixes whose basic function is to alter argument structure in various ways, typically increasing or decreasing the number of arguments (valency) of a predicate. Section 7 summarizes the main points of the chapter and outlines directions for future research on argument structure in Japanese.

## 2 Some discourse considerations

Despite the existence of predicates of different valency (one-place, two-place, etc.), when we observe the behavior of predicates in contexts of actual use, a striking feature that emerges is a tendency for no more than one argument to be overtly expressed per clause on the surface, no matter what the valency of the predicate may be. This can be illustrated in a mini-narrative such as the following, where clause divisions are indicated by “/” and overt nominal arguments are indicated in each case by parentheses.

- (4) (*Sigoto no kaeri ni*) (*sinbun o*) *kat-te/* (*itimen o*)  
 work GEN return TMP newspaper ACC buy-GER first.page ACC  
*mi-ru to/* (*ekimae depaato toosan*  
 look.at-NPST COND station.front dept.store bankruptcy  
*no kizi ga*) *not-tei-ta./* (*Uti ni*) *kaet-te/*  
 GEN article NOM appear-RES-PST home GOAL return-GER  
*(tuma ni) mise-ru to/* (*komatta kao o*) *si-ta.*  
 wife DAT show-NPST COND dismayed face ACC make-PST  
 ‘On my way home I bought a newspaper and when I looked at the front page,  
 there was an article about the department store in front of the station going  
 bankrupt. When I got home and showed it to my wife, she looked dismayed.’

Appearing in the above are one-place predicates such as *x-ga noru* ‘x appear,’ two-place predicates such as *x-ga y-o kau* ‘x buy y,’ and three-place predicates such as *x-ga z-ni y-o miseru* ‘x show y to z.’ Yet in every clause except the first, only one noun phrase associated with the final predicate appears overtly. The noun phrase may of course be relatively large and have internally complex structure due to the presence of modifiers, such as the noun phrase *ekimae depaato toosan no kizi* ‘an article about the department store in front of the station going bankrupt.’

In an important study, Du Bois (1987) showed that the tendency for one lexical (full) noun phrase to appear per clause is one seen widely across languages. Full noun phrases are typically used to introduce new entities into a discourse, and speakers across languages appear to organize their speech so that they avoid introducing more than one of these at a time, thereby creating a flow of information that is easier for the hearer to process. In terms of argument structure, this means choosing predicates that have only one slot in their argument structure that has not already been filled by some other entity already mentioned in the discourse. Du Bois showed furthermore that the argument slots most often used to introduce new entities are objects of two-place transitive predicates and single arguments of one-place intransitive predicates. This results in a “preferred argument structure” that reflects an “ergative” pattern – a tendency observed widely across certain language to treat transitive objects and intransitive subjects in the same way, such as by giving them the same case marking. The kind of argument that is typically left out of preferred argument structure, by contrast, is the agent – the entity that intentionally acts to bring about an event. In (4), for example, this ergative pattern is seen in the salient presence of *o*-marked objects of two-place predicates such as *kau* ‘buy’, *miru* ‘look at,’ and *suru* ‘make (a face),’ *ga*-marked arguments with one-place predicates such as *noru* ‘be published,’ and certain other *ni*-marked arguments and adjuncts, but in the absence of any *ga*-marked agents.

As striking and broad ranging as this pattern is as a *surface* phenomenon of discourse, however, it must be strictly distinguished from argument structure itself. The reason is quite simply that an accurate meaning of what is being conveyed in natu-

rally occurring discourse cannot be constructed merely from the elements that appear overtly. Returning to example (4), an understanding of what is being conveyed in the prefinal clause *tuma ni miseru* ‘show to (my) wife’ requires reference to entities other than the single overt noun *tuma* ‘wife.’ What enables the hearer to reconstruct and comprehend the meaning here is none other than his/her knowledge of the (here) invisible argument structure of the predicate *miseru* ‘show,’ which can be represented as in (5).

- (5) ... *x- ga z- ni y- o mise-ru ...*  
           NOM       DAT   ACC show-NPST  
       ‘x shows y to z’

Of the three slots in the argument structure of (5), only one – the *z* slot – is filled overtly in (4), by *tuma* ‘wife,’ requiring that the two remaining unfilled argument slots *x* and *y* be filled by entities drawn from somewhere outside the clause itself. The only plausible candidates for this in the context of (4) are *watasi* ‘I’ and *kizi* ‘article.’ By combining the information in (5) with the contextual information available in (4), the hearer arrives at (6), with all slots necessary to understanding the meaning of *miseru* filled in, a calculation done instantaneously and in real time as a native hears the mini-narrative in (4).

- (6) ... *watasi -ga tuma-ni kizi-o mise-ru ...*  
       I           NOM wife DAT article ACC show-NPST  
       ‘I show the article to my wife.’

Implicit knowledge of argument structure is thus essential to accurate comprehension of real-time speech in Japanese.<sup>2</sup> At the same time, in producing speech, a native speaker of Japanese will rely on the assumption that the native hearer has access to argument structure to fill in noun phrase slots that are known from the context and will leave out overt mention of those noun phrases on the surface. Filling each of those noun phrase slots with full forms on the surface would result in utterances that are prolix, cumbersome, and distinctly non-native sounding in Japanese (e. g., as if the speaker in (4) were to actually produce a string such as in (6)), though this type of utterance is frequently heard in the speech of learners of Japanese whose native language, such as English, requires every slot in argument structure to be overtly marked, either by a full noun phrase or a pronoun.<sup>3</sup> Knowledge of argument structure

<sup>2</sup> For a humorous nontechnical account of the challenges posed by zero anaphora to the learner of Japanese, see Rubin (1992).

<sup>3</sup> While argument slots must as a general rule be overtly marked in English, there are some exceptions where argument slots can be left unfilled in certain restricted lexically defined environments such as *I spent the afternoon baking*, where the object of *bake* is understood to refer to things such as breads or pastries but not potatoes or hams (Fillmore 1986).

is thus essential not only to accurate comprehension of speech, but also native-like production of speech in Japanese.

### 3 Distinguishing adjuncts from arguments: the *siranai* test

As already seen, not every noun phrase that is subcategorized for possible co-occurrence with a predicate is necessarily present in its argument structure. The act of eating, for example, involves not only something/someone that eats and something eaten, but also some instrument (in the minimal case a body part such as the mouth) and occurs in space and time, but we are able to make perfect sense of sentences using the verb *taberu* ‘eat’ without the presence of noun phrases representing instruments or times or places, as seen in a generic sentence such as *John wa yasai sika tabenai* ‘John eats only vegetables,’ indicating that noun phrases expressing such entities are adjuncts, not arguments, of the verb *taberu* ‘eat.’

Finding an objective way to test for this intuitively clear distinction between arguments and adjuncts is not, however, a straightforward matter. One characteristic of arguments is that leaving them unexpressed creates a sense of ellipsis, a feeling that something is missing. (7a) and (7b), for example, both leave such an impression of something missing, in the case of (7a) a noun phrase that expresses what the children ate and that would be marked with accusative *o* if it were filled in, and in (7b), a noun phrase that expresses who ate the cake and that would be marked with nominative *ga* if it were filled in.

- (7) a. *Kodomo ga tabe-ta rasii.*<sup>4</sup>  
 children NOM eat-PST EVID  
 ‘It seems that the children ate ( ).’
- b. *Sono keeki o tabe-ta rasii.*  
 that cake ACC eat-PST EVID  
 ‘It seems that ( ) ate that cake.’

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<sup>4</sup> The sentence-final evidential *rasii* ‘it seems’ is appended in many of the examples in this chapter in order to reduce the effects of immediate context on the interpretation of a sentence, and in particular to avoid the bias that would otherwise be present in cases such as (7b) to identify an unexpressed subject with the speaker. The sense of ellipsis is otherwise weakened due to the convention that unexpressed agents are normally identified with the speaker. Furthermore, this will allow us in examples (8) and following to use a test involving the expression *siranai* ‘I don’t know’ without complications arising from the fact that the use of *siranai* ‘I don’t know’ is normally awkward when used by a speaker in reference to his/her own actions.

Leaving unexpressed the time, place, or instrument of the eating in (7a) and (7b), by contrast, does not result in the same sort of elliptical feeling, even though there is no problem with information of this sort being included in the same clause with *taberu* ‘eat,’ as in (8).

- (8) *Yuube daidokoro de sono keeki o naihu de*  
 last.night kitchen LOC that cake ACC knife INST  
*tabe-ta rasii.*  
 eat-PST EVID  
 ‘It seems that ( ) ate that cake last night in the kitchen with a knife.’

Strong as the sense of ellipsis may be in examples such as (7), though, relying on this sense alone does not always provide a clear basis for sorting adjuncts from arguments. In (9), for example, there seems to be some sense that a location is missing, one that would be marked by a locative *ni*, but whether this sense is strong enough to say that there is a *ni*-marked argument in the argument structure of *aru* ‘exist’ is not immediately clear.

- (9) *Asuka zidai ni tate-rare-ta otera ga ar-u rasii.*  
 Asuka period TMP build-PASS-PST temple NOM exist-NPST EVID  
 ‘It appears that there is/are a temple/s in/at ( ) built in the Asuka period.’

It would be desirable to have a more objective way of discriminating arguments – noun phrases that are necessary to understanding the meaning of a predicate – from non-argument adjuncts – those that are not, in a way that goes beyond subjective reliance on a feeling of ellipsis.

A candidate for such a test is proposed in Teramura (1982), who observes that an unexpressed noun phrase argument that the hearer is unable to recover from context will typically elicit a question word (*hanmon yuuhatu*) with an associated case particle seeking the missing information. The ellipted information in (7a), for example, might elicit *nani o* ‘what ACC?’ and in (7b) *dare ga* ‘who NOM?’ from a hearer (B) who is unable to recover the information from context.

- (10) a. A: *Kodomo ga tabe-ta rasii.* → B: *Nani o?*  
 children NOM eat-PST EVID what ACC  
 ‘It seems that the children ate ( ).’ ‘(Ate) what?’  
 b. A: *Sono keeki o tabe-ta rasii.* → B: *Dare ga?*  
 that cake ACC eat-PST EVID who NOM  
 ‘It seems that ( ) ate that cake.’ ‘Who (did)?’



The possibility of a follow-up question word is a good start, but unfortunately takes us too far. It is equally possible for (7a) or (7b) to be followed by question phrases such as *itu* 'when?', *doko de* 'where?', *nan de* 'with what?', or *dare to* 'with whom?', none of which seem to point to information necessary for making sense of *taberu* 'eat.' In order to obtain the results we need, we would have to find some way of separating out just the cases where the follow-up question asks for information necessary to understanding the predicate from information which is not.

A possible solution to this problem emerges if we carry the mini-dialogues in (10) one step further and consider whether it is possible for speaker A to deny knowledge of the information asked for in B's question by responding with *siranai* 'know-NEG-NPST' or some other form of denial. In (10a) and (10b), a response by speaker A with *siranai* produces an awkward, indeed contradictory-sounding result, as indicated by the # marking in (11) (meaning "infelicitous in the given context"). Disavowing knowledge of the information sought in (11a) and (11b) appears to conflict with a hidden presumption that the speaker would have to know the information in question in order to use the predicate *taberu* "eat" to begin with.

- (11) a. A: *Kodomo ga tabeta rasii.* → B: *Nani o?*  
 'It seems that the children ate ( ).' ' (Ate) what?'  
 → A: *#Siranai.*  
 'I don't know.'
- b. A: *Sono keeki o tabeta rasii.* → B: *Dare ga?*  
 'It seems that ( ) ate that cake.' 'Who (did)?'  
 → A: *#Siranai.*  
 'I don't know.'

When we carry on this mini-dialog with question phrases such as *itu* ‘when?’ or *doko de* ‘where?’, by contrast, a response with *siranai* produces no sense of awkwardness or contradiction.

- (12) A: *Kodomo ga sono keeki o tabeta rasii.*  
 'It seems that the children ate that cake.'  
 B: *Itu?* 'Ate it when?'  
 A: *Siranai.* 'I don't know.'  
 B: *Doko de?* 'Ate it where?'  
 A: *Siranai.* 'I don't know.'

A contradictory-sounding response with *siranai* thus appears to pick out question phrases that target arguments, in contrast to a felicitous response, which appears to pick out question words targeting adjuncts. By applying question phrases of various

types in this way, we arrive at an argument structure for the verb *taberu* ‘eat’ of the form *x-ga y-o taberu* ‘x eats y.’<sup>5</sup>

Returning to the earlier example in (9), consider what happens when we apply this test – let us call it the *siranai* test – to the case of a follow-up question of the form *doko ni*? ‘where?’ As seen in (13), it appears that speaker A can disavow knowledge of the place represented in that question without a sense of contradiction, indicating that the verb *aru*, at least in one interpretation of this example, does not take a locative *ni* argument.

- (13) A: *Asuka zidai ni tate-rare-ta otera ga ar-u rasii.*  
 Asuka period TMP build-PASS-PST temple NOM exist-NPST EVID  
 ‘It seems that there is/are temple/s built in the Asuka period.’  
 → B: *Doko ni?* → A: *Siranai*  
 ‘Where?’ ‘I don’t know.’

One might object that there really is a locative *ni* argument present in this example, but that *doko ni*? ‘where?’ seeks information that is more specific than is needed to be able to capture that fact. A’s statement may, that is, presume a broad location set by the context for the apparent existence of a temple or temples built in the Asuka period, but *doko ni* is understood to ask for information about a more specific location *within* that broader context that is not available to Speaker A. Speaker A could therefore disavow knowledge of the specific location without disavowing knowledge of the broader location relevant to the context of (13), a location that is somehow implied but nevertheless part of the argument structure of the verb *aru* here.

Such an objection points to an inherent limitation in the *siranai* test: it is only as good as the availability of a question word that elicits the right level of specificity to capture the presence of an argument, without asking for more. Perhaps there are some types of arguments that have no appropriate corresponding question words, or argu-

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5 Another test intended to discriminate between arguments and adjuncts that similarly relies on the use of questions targeting unfilled argument/adjunct slots is the “question pull” test proposed in Hasegawa (1988). This test requires an initial statement by A having multiple unfilled argument/adjunct slots, such as *Kesita rasii* ‘It seems that (someone) erased (something)’ that can elicit a range of follow-up questions from B, such as *Dare ga?* ‘Who (did)?,’ *Nani o* ‘(Erased) what?,’ *Itu* ‘When?,’ *Doko de* ‘Where?,’ etc. In such cases native speakers exhibit a preference in the order of questions asked whereby questions about obligatory arguments must be asked (and answered) prior to questions about optional adjuncts. To qualify for being an argument (“complement,” in Hasegawa’s terminology), the corresponding question must be ordered *prior* to a question corresponding to what is a known adjunct, such as *Itu* ‘When?.’ In addition to being cumbersome to apply, relatively restricted in its range of application, and subject to substantial subjective variation, this test suffers from the drawback of assuming at the outset the kind of information it is intended to provide, i.e., the existence of a known adjunct, and fails to provide a clear cutoff between arguments and adjuncts in the order of questions that *precede* the questioned adjunct.

ments that are too unspecific to be elicited by any existing question word. But on the other hand, as we noted in connection with (8) earlier, there are typically any number of entities that may be relevant to the situation expressed by a predicate, such as occurrence at *some* time or at *some* place in the case of predicates expressing events, which nevertheless are not required to be represented in the argument structure of a predicate. The *siranai* test provides at least some measure of objectivity in discriminating between those cases where an entity clearly must be represented in the argument structure of a predicate or not. Among existence expressions, for example, it points to a contrast between the earlier example with *aru* and the following example with *iru*, where a locative argument is clearly indicated.

- (14) A: *Tanaka-kun ga i-ru rasii.* → B: *Doko ni?*  
 Tanaka NOM exist-NPST EVID where LOC  
 ‘It seems that Tanaka is ( ).’ ‘Where?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’

As noted by Kinsui (2006), existence expressions in Japanese appear to fall into two categories. One is a category of “spatial existence” expressions, illustrated in (15a), and another a category of “quantificational existence” expressions, illustrated in (15b) (examples from Kinsui 2006).

- (15) a. *Okaasan i-na-i/ \*na-i nee. Doko ni it-ta*  
 Mom exist-NEG-NPST/ exist.NEG-NPST SFP where GOAL go-PST  
*no ka na.*  
 NMLZ Q SFP  
 ‘Mom’s not around, is she? I wonder where she went.’  
 b. *Zyugyootyuu ni ne-tei-ru gakusei ga i-ru/*  
 class.within TMP sleep-PROG-NPST students NOM exist-NPST/  
*ar-u.*  
 exist-NPST  
 ‘There are students who sleep during class.’

Uses of the existence verbs *iru* and *aru* can be found in both categories, but among the spatial existence type, *iru* requires an animate subject and *aru* requires an inanimate subject, as seen in the fact that *nai* (the negative of *aru*) is not possible in (15a). Among the quantificational existence type, by contrast, *aru* may occur with subjects that are either animate or inanimate, as seen in the fact that it can occur with the animate noun *gakusei* ‘students’ in (15b). Kinsui argues that the spatial existence expressions are two-place predicates, taking a *ni*-marked locative argument, whereas the quanti-

fictional existence expressions are one-place, taking a single *ga*-marked argument. This difference in valency is confirmed by application of the *siranai* test:

- (16) a. A: *Okaasan inai nee.* → B: *Doko ni?* → A: *#Siranai.*  
 ‘Mom’s not around, is she?’ ‘Where?’ ‘I don’t know.’
- b. A: *Zyugyootyuu ni neteiru gakusei ga iru/aru.*  
 ‘It seems that there are students who are sleeping during class.’  
 B: → *Doko (no kyoositu) ni?* → A: *Siranai.*  
 ‘In what (classroom)?’ ‘I don’t know.’

In general, with either *aru* or *iru*, two-place valency appears to correlate positively with the level of specificity of the subject. Thus, subjects having unique referents such as *Tanaka-kun* ‘Tanaka’ in (14) and *okaasan* ‘Mom’ in (16a) implicate the presence of a *ni*-marked argument, whereas generic classes such as *gakusei* ‘students’ in (16b) do not. Returning to the earlier example (9), repeated here, the fact that some might ‘feel’ the presence of a *ni*-marked argument with *aru*, but that the speaker can disavow knowledge of such an argument (as shown earlier in (13)) can be explained by the possibility of two interpretations for *asuka zidai ni taterareta otera*, either as a particular temple built in the Asuka period, or as a generic class of temples built in the Asuka period.

- (9) *Asuka zidai ni taterareta otera ga aru rasii.*  
 ‘It appears that there {is a temple/are temples} built in the Asuka period in/at ( ).’

Indeed, if we adjust the modifier on *otera* in such a way as to make it a uniquely referring expression, as in (17), the existence of a *ni*-marked argument is strongly indicated by the *siranai* test.

- (17) A: *Asuka zidai ni tate-rare-ta saidai no otera ga*  
 Asuka period TMP build-PASS-PST largest GEN temple NOM  
*ar-u rasii.*  
 exist-NPST EVID  
 ‘It seems that the largest temple built in the Asuka period is in/at ( ).’  
 → B: *Doko ni?* → A: *#Siranai.*  
 ‘Where?’ ‘I don’t know.’

Despite its limitations, then, the *siranai* test provides a workable and effective tool for discriminating between arguments and non-argument adjuncts. It addresses the shortcomings of Teramura’s test based on follow-up questions alone, without sacrificing the broad applicability of that test. Indeed, no previous test proposed for argu-



- (19) (Kyoo wa) samu-i desu nee/ i-i tenki  
 today TOP be.cold-NPST POL SFP be-nice-NPST weather  
*des-u nee.*  
 COP.POL-NPST SFP  
 ‘It’s cold/nice weather today, isn’t it?’

Utterances such as (19) are heavily context dependent, obscuring whatever noun phrase argument might be present. Intuitively, such expressions are “about” the immediate physical environment of the speaker, but in a way so self-evident as to make surface expression of that environment superfluous. To determine the presence of an argument in such cases therefore it is necessary to reduce the context-dependent nature of the utterance so that any argument that is present may be made the target of a question. Framing such expressions with the evidential *rasii* provides just such a means for doing so. If we then apply the *siranai* test, it becomes clear that predicates appearing in such weather expressions have a *ga*-marked argument just as does any predicate in Japanese:

- (20) A: (Kyoo wa) samu-i rasii/i-i tenki  $\emptyset$  rasii.<sup>7</sup>  
 today TOP be.cold-NPST EVID be-nice-NPST weather COP-NPST EVID  
 ‘It seems that it’s cold/it’s nice weather today.’  
 → B: Doko ga? → A: #Sir-ana-i.  
 where NOM know-NEG-NPST  
 ‘Where (is)?’ ‘I don’t know.’  
**x-ga samui** ‘x is cold’; **x-ga ii tenki da** ‘x is nice weather’

In addition to showing that every predicate in Japanese has at least one *ga*-marked argument, the *siranai* test further shows that any noun phrase marked by *ga* has the status of an argument in Japanese. This is so even in the case of so-called multiple nominative constructions allowing more than one *ga*-marked noun phrase in a single clause, such as the two-place predicates *suki* (*da*) ‘like (have an affection for)’ and *kirai* (*da*) ‘dislike’ (Kuno and Johnson 2005). The default surface case pattern observed in main clauses with these predicates is *x-wa y-ga*, with the experiencer *x* of the emotion receiving topic marking with *wa* and the target of the emotion *y* marked with *ga*, as in (21).

- (21) Uti no musuko wa inu ga suki-da.  
 home GEN son TOP dogs NOM like-COP.NPST  
 ‘Our son likes dogs.’

<sup>7</sup> Note that by a morpho-phonological rule, the nonpast form of the copula *da* is automatically deleted before certain clause final forms, including *rasii*.

The topic marker *wa* does not, however, mark a case relationship, but rather ‘hides’ an underlying case marker. This case marker can be recovered by putting the clause in contexts that do not allow topic marking, such as most subordinate contexts. When an example such as (21) is put in such a subordinate context, the *ga*-marking obscured by the topic marker emerges, revealing the double *ga*-marking pattern.

- (22) *Uti no musuko ga inu ga suki-na no wa*  
 home GEN son NOM dogs NOM like-COP NMLZ TOP  
*syuuti-no-toori da.*  
 common.knowledge COP.NPST  
 ‘It is a matter of common knowledge that our son likes dogs.’

Application of the *siranai* test confirms that both of these *ga*-marked noun phrases are arguments.

- (23) a. A: *Uti no musuko ga suki* ∅ *rasii.*  
 home GEN son NOM like COP.NPST EVID  
 ‘It seems that our son likes ( ).’<sup>8</sup>  
 → B: *Nani ga?* → A: *#Sir-ana-i.*  
 what NOM know-NEG-NPST  
 ‘(Likes) what?’ ‘I don’t know.’
- b. A: *Inu ga suki* ∅ *rasii.*  
 dogs NOM like COP.NPST EVID  
 ‘It seems that ( ) likes dogs.’  
 → B: *Dare ga?* → A: *#Sir-ana-i.*  
 who NOM know-NEG-NPST  
 ‘Who (does)?’ ‘I don’t know.’
- x-ga y-ga suki-da. ‘x likes y.’**

Alongside the multiple nominative pattern seen with predicates of the *suki-da* type, there is a structurally different type of multiple nominative pattern exemplified by *Zoo wa(←ga) hana ga nagai* ‘Elephants have long noses’ that will be discussed further in Section 6, but all occurrences of *ga*-marked noun phrases in either pattern exhibit argument status when the *siranai* test is applied.

A more common pattern of marking a second argument beyond the minimally necessary *ga*-marked argument involves marking with accusative *o* or dative *ni*, an

<sup>8</sup> This sentence is actually ambiguous between this and a second interpretation ‘It seems that ( ) likes our son,’ but the follow-up question *Nani ga* ‘What NOM?’ selects only the first of these two interpretations.

example of the former seen in the previous section with *x-ga y-o taberu* ‘x eats y’. Unlike *ga*, however, case marking with *o* or *ni* does not in itself guarantee that the noun phrase in question is an argument. Among accusative noun phrases that mark locatives indicating path of motion, for example, some exhibit argument behavior, but others do not. While both *wataru* ‘cross over’ and *aruku* ‘walk’ allow accusative path objects, for example, only in the case of *wataru* is the accusative noun phrase an argument.

- (24) A: *Sakki watat-ta rasii.*  
 minute.ago cross-PST EVID  
 ‘It seems that s/he crossed over ( ) just a minute ago.’  
 → B: *Nani/doko o?* → A: *#Sir-ana-i.*  
 what/where ACC know-NEG-NPST  
 ‘(Crossed over) what/where?’ ‘I don’t know.’  
**x-ga y-o wataru** ‘x crosses (over) y’
- (25) A: *Yukkuri arui(te-ki)-ta rasii.*  
 slowly walk-come-PST EVID  
 ‘It seems that s/he walked here leisurely.’  
 → B: *Doko o?* → A: *Sir-ana-i.*  
 where ACC know-NEG-NPST  
 ‘(Along) where?’ ‘I don’t know.’  
**x-ga kuru** ‘x comes (here)’

The same is true of marking with *ni*. While *ni* may co-occur as a locative marker with *kakureru* ‘hide’ in cases such as *ana ni kakureru* ‘hide in (its) hole,’ for example, our test indicates that it does not mark arguments with this predicate.

- (26) A: *Risu ga kakureta rasii.* → B: *Doko ni?*  
 squirrel NOM hide-PST EVID where LOC  
 ‘It seems that the squirrel hid.’ ‘Where?’  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’

The various types of *ni*-marked noun phrases in the following examples, on the other hand, all test positively for argument status.



- (27) A: *Booru ga hait-ta rasii.* → B: *Nani/doko ni?*  
 ball NOM go.in-PST EVID what/where LOC  
 ‘It seems that the ball went into ( ).’ ‘(Into) what/where?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-ni hairu** ‘x goes into (enters) y’
- (28) A: *Taroo ga paatii de at-ta rasii.* → B: *Dare ni?*  
 Taro NOM party LOC meet-PST EVID who DAT  
 ‘It seems that Taroo met ( ) at a party.’ ‘(Met) who(m)?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-ni au** ‘x meets y’
- (29) A: *Imooto ga ni-tei-ru rasii.*  
 younger.sister NOM resemble-STAT-NPST EVID  
 ‘It seems that the younger sister looks like ( ).’  
 → B: *Dare ni/to?* → A: *#Sir-ana-i.*  
 who DAT/COM know-NEG-NPST  
 ‘(Like) who?’ ‘I don’t know.’  
**x-ga y-ni/to ni(tei)ru** ‘x looks like y’
- (30) A: *Kono zisyo mo onazi rasii.*  
 this dictionary also be.same.NPST EVID  
 ‘It seems that this dictionary is also the same as ( ).’  
 → B: *Dore ni/to?* → A: *#Sir-ana-i.*  
 which.one DAT/COM know-NEG-NPST  
 ‘(As) which one?’ ‘I don’t know.’  
**x-ga y-ni/to onazi da** ‘x is the same as y’

These examples illustrate the diverse range of meanings exhibited by *ni*-marked arguments, including locatives of goal, as in (27), datives of indirect object, as in (28), and standards for comparison of similarity, as in (29) and (30).

The role of *ga*, *o*, and *ni* as the “standard” markers of arguments is well established in the literature. They have sometimes been analyzed as case markers without inherent meaning whose meaning is assigned by their predicates, thus exhibiting multiple meanings varying with their predicate, as does *ni* in examples (27)–(30) above. There is no clear consensus, however, on whether the ability to mark arguments is strictly limited to these three. Evidence from the *siranai* test sheds some light on this question, indicating that at least two other case particles should be considered

to have this ability – comitative *to* ‘with/as’ and ablative *kara* ‘from.’ Significantly, though, it is rare that these are the sole option for marking arguments: where the evidence points to argument status on the noun phrases these mark, there is typically the possibility of alternate marking with *o* or *ni*. In (29) and (30), for example, the second argument may be marked with *to*, but *ni* is possible as well. Examples are few where the only marking available on a second argument is *to*, one case in point being *tigau* ‘be different.’

- (31) A: *Kono zisyo wa tiga-u rasii.*  
 this dictionary TOP be.different-NPST EVID  
 ‘It seems that this dictionary is different from ( ).’  
 → B: *Dore to/\*ni?* → A: *#Sir-ana-i.*  
 which.one COM/DAT know-NEG-NPST  
 ‘(From) which one?’ ‘I don’t know.’  
**x-ga y-to tigau** ‘x is different from y’

Ablative *kara*, likewise, sometimes exhibits argument status by the *siranai* test, but typically only with predicates that allow marking with the accusative particle *o* as well. Second arguments marked with *kara* are, in particular, limited to verbs expressing motion away from a source, as in (32).

- (32) A: *Kodomo ga ori-ta rasii.* → B: *Nani kara/o?*  
 children NOM get.off-PST EVID what ABL/ACC  
 ‘It seems that the children got off ( ).’ ‘(Got off of) what?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-kara/o oriru** ‘x gets off/out of y’

- (33) A: *Hanare-ru (to sabisi-ku nar-u) rasii.*  
 leave-NPST CND lonely-GER become-NPST EVID  
 ‘It seems that (s/he gets lonely when) s/he leaves ( ).’  
 → B: *Dare/doko kara/o?* → A: *#Sir-ana-i.*  
 who/where ABL/ACC know-NEG-NPST  
 ‘(Leaves) who/where?’ ‘I don’t know.’  
**x-ga y-kara/o hanareru** ‘x leaves/separates from y’

Closely related to this are motion verbs expressing reciprocal motion of two entities away from one another. In such cases the *kara* marking on the source entity alternates with comitative *to*, rather than *o*, as illustrated by *wakareru* ‘separate from/break up with.’

- (34) A: *Wakare(-te kara zutto genki ga*  
           separate.from-GER since all.the.time energy NOM  
           *na-i) rasii.*  
           exist.NEG-NPST EVID  
           ‘It seems that ever since s/he separated from ( ), s/he has not been well.’  
       → B: *Dare to/kara?* → A: *#Sir-ana-i.*  
               who COM/ABL? know-NEG-NPST  
               ‘From who?’ ‘I don’t know.’  
           **x-ga y-kara/to wakareru** ‘x separates from/breaks up with y’

Even though *wakareru* exhibits a case alternation like this, neither of the alternate forms is one of the “standard” argument markers *ga*, *o*, or *ni*. Together with the evidence from *tigau* ‘be different,’ this confirms that *kara* and *to* in rare cases indeed have the capacity to mark arguments on their own.

As predicted from the patterns seen so far, noun phrases marked with *kara* where no alternation with another particle is observed will typically be adjuncts. Such is the case with the verb *kuru* ‘come,’ as seen in (35a). *Kuru* ‘come’ does require, on the other hand, a goal argument, as indicated by (35b), although the goal entity does not usually appear overtly, because the “deictic” nature of this verb requires that the motion be directed toward the speaker or someone whose standpoint is taken by the speaker.

- (35) A: *Tomodati ga ki-ta rasii.*  
           friend NOM come-PST EVID  
           ‘It seems that a friend came.’  
       a. → B: *Doko kara/\*o/\*to?* → A: *#Siranai.*  
               From where? I don’t know.  
       b. → B: *Doko ni/e?* → A: *#Siranai.*  
               (To) where? I don’t know.  
           **x-ga y-ni kuru** ‘x comes to place y (=location of (standpoint taken by) speaker)’

The possibility of the allative marker *e* as an alternative to *ni* in (28b) brings to five the total number of case particles capable of marking the second (non-nominative) argument of a two-place predicate: *o*, *ni*, *kara*, *to*, and *e*. Of these, the vast majority of second arguments is marked by *o* or *ni* or allows the possibility of alternation with *o* or *ni*.

When we move up the scale of valency to consider possibilities for adding a third argument, we encounter some surprising results. Three-place predicates are considered standard in Japanese, the third argument most commonly marked by *ni* and appearing in the pattern *x-ga y-o z-ni* or *x-ga z-ni y-o*. Some *ni*-marked noun phrases strongly exhibit third argument status, such as those expressing a locative goal with the verbs *ireru* ‘put (in)’ and *oku* ‘put/place (in/on)’ in (36) and (37).

- (36) A: *Nimotu o ire-ta rasii.* → B: *Nani/doko ni?*  
 luggage ACC put.in-PST EVID what/where GOAL  
 ‘It seems that s/he put the luggage in ( ).’ ‘(In) what/where?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-o z-ni ireru** ‘x puts y in z’
- (37) A: *Saihu o oi-ta rasii.* → B: *Doko ni?*  
 walletACC put-PST EVID where GOAL  
 ‘It seems that s/he put his/her wallet in/on ( ).’ ‘(Put it) where?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-o z-ni oku** ‘x puts y in/on z’

Certain verbs of giving, such as *ataeru* ‘give, inflict’ in (38), also test positively for a *ni*-marked third argument, not surprising in view of the traditional assumption that giving-type verbs are paradigmatic examples of three-place predicates.

- (38) A: *Kanari syoogeki o atae-ta rasii.*  
 quite.a.lot shock ACC give-PST EVID  
 ‘It seems that it gave quite a shock to ( ).’  
 → B: *Dare/nani ni?* → A: *#Sir-ana-i.*  
 who/what DAT know-NEG-NPST  
 ‘(To) who/what?’ ‘I don’t know.’  
**x-ga y-ni z-o atae-ru** ‘x gives z to y’

But many predicates commonly thought to have third arguments marked by *ni* turn out to have only marginal status as three-place predicates by this test, as judged by the surprisingly high level of acceptability of a negative response from the speaker when questioned about the identity of the *ni*-marked noun phrase.

- (39) A: *Asahayaku nimotu o todoke-ta rasii.*  
 early.in.morning.luggage ACC deliver-PST EVID  
 ‘It seems that s/he delivered the luggage to ( ) early in the morning.’  
 → B: *Dare/doko ni?* → A: *?Sir-ana-i.*  
 who/where DAT know-NEG-NPST  
 ‘(To) who/where?’ ‘I don’t know.’  
**x-ga y-o [z-ni]<sup>9</sup> todokeru** ‘x delivers y to z’
- (40) A: *Matigat-te syorui o watasita rasii.*  
 mistake-GER documents ACC hand.over-PST EVID  
 ‘It seems that s/he handed the documents to ( ) by mistake.’  
 → B: *Dareni?* → A: *?Sir-ana-i.*  
 who DAT know-NEG-NPST  
 ‘(To) whom?’ ‘I don’t know.’  
**x-ga y-o [z-ni] watasu** ‘x hands y to z’
- (41) A: *Nikki ni kai-ta koto o mise-ta rasii.*  
 diary GOAL write-PST thing ACC show-PST EVID  
 ‘It seems that s/he showed ( ) what s/he wrote in the diary.’  
 → B: *Dare ni?* → A: *?Sir-ana-i.*  
 who DAT know-NEG-NPST  
 ‘(To) whom?’ ‘I don’t know.’  
**x-ga y-o [z-ni] miseru** ‘x shows y to z’
- (42) A: *Kaisya no himitu o osie-ta rasii.*  
 company GEN secret ACC tell-PST EVID  
 ‘It seems that s/he told company secrets to ( ).’  
 → B: *Dare ni?* → A: *?Sir-ana-i.*  
 who DAT know-NEG-NPST  
 ‘(To) whom?’ ‘I don’t know.’  
**x-ga y-o [z-ni] osieru** ‘x tells y to z’

Perhaps even more surprising is the marginal three-place status exhibited by standard verbs of giving, such as *ageru* ‘give’ by this test:

<sup>9</sup> The use of square brackets [ ] here is used to distinguish arguments that test weakly for argument status, as opposed to noun phrases that are clearly optional adjuncts, which are indicated by parentheses ( ).

- (43) A: *Syookin o zenbu age-ta rasii.*  
 prize.money ACC all give-PST EVID  
 'It seems that s/he gave all the prize money.'  
 → B: *Dare ni?* → A: *?Sir-ana-i.*<sup>10</sup>  
 who DAT know-NEG-NPST  
 '(To) whom?' 'I don't know.'  
**x-ga y-o [z-ni] ageru** 'x gives y to z'

Though exhibiting some awkwardness when disavowal is made with *siranai* in this way, each of the examples in (39) to (43) seems to be acceptable with an understood *hito ni* 'to (some other) person' that need not either be made overt or specified further as to the identity of *hito* 'other person.' The question is whether this indicates the presence of an argument or not. Perhaps this is a case where the available question word simply requests information that is more specific than required to test for the presence of an argument. Whatever the case, the predicates in (39) to (43) exhibit at least some level of awkwardness with the *siranai* response that distinguishes them from a third group of predicates that exhibit no such awkwardness at all.

- (44) A: *Kuruma o ut-ta rasii.* → B: *Dare ni?*  
 car ACC sell-PST EVID who DAT  
 'It seems that s/he sold the car.' '(To) whom?'  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 'I don't know.'  
**x-ga y-o (z-ni) uru** 'x sells y (to z)'
- (45) A: *Iro o kae-ta rasii.* → B: *Nani ni?*  
 color ACC change-PST EVID what DAT  
 'It seems that s/he changed the color.' '(To) what?'  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 'I don't know.'  
**x-ga y-o (z-ni) kaeru** 'x changes y (to z)'

<sup>10</sup> Disavowal with a *siranai* response is even less problematic when A's original statement is put in the *te-sima(w)u* 'end up doing, do accidentally' form, such as *agete-simatta*, and similarly for examples (39)–(42), perhaps because of the focus the accidental quality of the resulting meaning places on the action itself, as opposed to a purposeful action directed at another person.

- (46) A: *Zikan o kime-ta rasii.* → B: *Nan(zi) ni?*  
 time ACC set-PST EVID what-(time) DAT  
 ‘It seems that s/he set the time.’ ‘(To) what?’  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-o (z-ni) kimeru** ‘x decides/sets y (as/at z)’

These predicates, while allowing *ni* phrases as in *kuruma o musuko ni utta* ‘sold his car to his son,’ do not require them as arguments. All in all, the number of predicate forms that exhibit robust third arguments with *ni* from this test turn out to be fewer than has commonly been assumed.

Another possible case marker for third arguments is ablative *kara* ‘from’ in the pattern *x-ga y-o z-kara*. Two types of predicates can be distinguished here: those where the *kara* marking alternates with *ni*, and those where it does not. An example of the first type is *morau* ‘get/receive,’ as in (47).

- (47) A: *Yubiwa o morat-ta rasii.* → B: *Dare kara/ni?*  
 ring ACC get-PST EVID who ABL/DAT  
 ‘It seems that s/he got a ring (from ( )).’ ‘(From) whom?’  
 → A: *?Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-o [z-ni/kara] morau** ‘x gets y from z’<sup>11</sup>

Just as with *ageru* ‘give,’ the degree of infelicity that results with *siranai* here is not severe, though not without some awkwardness. Representative of the second type of predicate, where *kara* does not alternate with *ni*, is *ubau* ‘rob/take from.’ Here the *kara*-marked noun phrase emerges more strongly as an argument:

- (48) A: *Taikin o ubat-ta rasii.*  
 large.money ACC rob-PST EVID  
 ‘It seems that s/he robbed a huge sum of money from ( ).’  
 → B: *Dare kara/\*ni?* → A: *#Sir-ana-i.*  
 who ABL/DAT know-NEG-NPST  
 ‘(From) whom?’ ‘I don’t know.’  
**x-ga y-o z-kara ubau** ‘x robs y from z/robs z of y’

<sup>11</sup> When used with verbs of receiving such as *morau* ‘get/receive,’ *ni* indicates that the event in question is directed toward the subject, rather than away from the subject as is the case with verbs of giving of the *ageru* type in (43).

By contrast, the verb *nusumu* ‘steal,’ having a meaning similar to *ubau* and likewise co-occurring with *kara*, does not appear to require a *kara*-marked noun phrase as an argument:

- (49) A: *Taikin o nusun-da rasii.* → B: *Dare kara?*  
 large.money ACC steal-PST EVID who ABL  
 ‘It seems that s/he stole a huge sum of money.’ ‘(From) whom?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**x-ga y-o (z-kara) nusumu** ‘x steals y from z’

Similar as their meaning may be, *ubau* and *nusumu* turn out by this test to have different valencies.

*Kara* and *ni* are the only case markers observed on third arguments with simple predicates, and cases of *kara* marking an argument are predominantly those cases where it alternates with *ni*. The behavior of *ubau*, where no such alternation is observed, confirms that *kara* is nevertheless capable of marking arguments alone. The one other case marker that might be considered as a candidate for marking a third argument is comitative *to* ‘with,’ but the only predicates that emerge as possibilities here are compound predicates, such as *surikaeru* ‘secretly replace with’ in (50), and even these turn out to test only weakly as arguments by the *siranai* test.

- (50) A: *Kinko ni hait-tei-ta daiya o surikae-ta rasii.*  
 safe LOC enter-RES-PST diamond ACC replace-PST EVID  
 ‘It seems that s/he secretly replaced the diamond in the safe.’  
 → B: *Nani to?* → A: *#Sir-ana-i.*  
 what COM know-NEG-NPST  
 ‘(With) what?’ ‘I don’t know.’  
**x-ga y-o (z-to) surikaeru** ‘x (secretly) replaces y with z’

Unless otherwise indicated, *surikaeru* is normally understood to involve replacement of an item with another item of the same category as that expressed by the *o*-marked noun phrase, so that even in the absence of another distinct argument, A’s statement in (50) would be understood to mean replacing a diamond with another diamond (perhaps a fake one). Still, there is some discomfort in speaker’s A’s disavowal when questioned about the identity of the third participant in this event, pointing to at least the faint presence of such a third participant in A’s understanding, whether or not A is able to express it concretely as a distinct overt argument from the noun phrase marked by *o*.

Simple predicates in Japanese, then, exhibit robust third arguments to a more limited extent than has been widely assumed, either in terms of the number of pre-



dicates exhibiting such arguments or in terms of the range of case particles marking such arguments. Given the marginal status of even third arguments, it is not surprising that the *siranaï* test provides no evidence of predicates with four arguments or more (the case of complex predicates will be considered separately in Section 7). At least for simple predicates, it is clear that the presence of one or two arguments is the dominant, preferred pattern. This pattern provides an interesting counterpart to the preferred argument structure noted by Du Bois (1987) to operate on the discourse level, as noted earlier in Section 2. The limitation of underlying arguments to two is likely a constraint grounded in human cognition or neurology in the same way that the limitation of overt arguments to one in discourse is grounded in constraints imposed by the communicative process. Both constraints appear to have the purpose of easing the burden on the human cognitive apparatus arising from limitations on its ability to process a large amount of information at once, whether this be in the production or comprehension of information structures. It is reasonable to expect that these limitations would be more severe in decoding information structures formulated by another speaker than in formulating them in one's own mind, a difference reflected in the lower number of overt entities appearing in a clause compared to the number of entities available in argument structure.

The *siranaï* test provides a tool for determining the argument status of noun phrases in a way that combines objectivity and wide applicability in way that has not been possible hitherto, but, as we have seen, it has its limitations. The most salient of these is that it is restricted by the inventory of question words in Japanese, in particular those that seek just the right level of specificity or concreteness of information, but not more, than is necessary for a noun phrase to qualify as an argument. But exactly *how* specific or concrete the information about an entity must be to qualify as an argument of a predicate is an open question to begin with. As we noted at the outset of this chapter, there are numerous entities having some level of involvement in an event that, while potentially present, are not specified in the argument structure of a predicate expressing the event. These include times, places, instruments, body parts used in performing an action, individuals affected positively or negatively by an action, circumstances that provide the cause or reason for an event, and so forth. Which of these are packaged into the actual argument structure of a particular predicate is, in the final analysis, an empirical question that has to be determined case by case for the predicates of a given language. In the absence of any *a priori* way of determining this, the test we have considered provides a tool that allows us to begin to answer this question in an objective way. It does so by tying our understanding of arguments to entities that must be present in the consciousness of the speaker using a particular predicate in a form sufficiently distinct and concrete to enable the speaker to express them in an overt, and therefore observable, form if called upon to do so.<sup>12</sup> Applying

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<sup>12</sup> A reviewer comments that the ability of the *siranaï* test to identify arguments is related to the conditions under which ellipsis is possible. Specifically, ellipsis is possible when the speaker assumes that

this test has shown, though, that the boundary between arguments and adjuncts is not necessarily a sharp line. Between those entities that must be concretely present in the consciousness of a speaker in order to use a given predicate and those entities that may be, but do not have to be, concretely present, is an intermediate territory occupied by entities that must be present in the consciousness of the speaker, but in a form insufficiently concrete to allow the speaker to provide overt expression of them in any but the most general form. Let us call these “quasi-arguments.” Examples of these would be third participants with verbs expressing giving or related meanings such as *watasu* ‘hand over,’ *osieru* ‘teach/tell,’ *ageru* ‘give,’ etc. considered earlier in (39)–(43), where the third participant need not be present in the consciousness of the speaker in any form more concrete than that expressible by the non-referential *hito ni* ‘to someone else.’

Adjuncts of a predicate represent concrete entities seen to participate in an event, just as do arguments, but do not have to be so expressed, or even present in the consciousness of the speaker, in order for the speaker to use the predicate. Still, their ability to appear with a predicate is not random, but is constrained by the meaning of a predicate just as are the predicate’s arguments. This is reflected in the *siranai* test by the range of *possible* question types that speaker B may use in responding to A, regardless of A’s ability to disavow the information requested. The constellation of case particles that are used to mark the combined group of arguments, quasi-arguments, and adjuncts of a predicate itself forms an integral part of the native speaker’s knowledge of a predicate that can play a role in reconstructing information left unexpressed on the surface. Before looking at the role of adjuncts, however, a few words are in order about the possibility of predicates taking more than one argument structure.

## Predicates with multiple argument structures

To say that every predicate has an argument structure does not mean that it has *only* one argument structure. A given predicate may have multiple argument patterns associated with it, often associated with different senses of the same verb, and this will naturally affect the results of applying the *siranai* test, depending on which sense is intended by the speaker. The verb *deru*, for example, has a variety of case patterns associated with it reflecting different argument structures built around a basic meaning of ‘go out/come out/emerge/appear.’

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the hearer can identify the entity being ellipted, and this presupposes that the speaker himself/herself can identify the entity in question. This begs, however, the question of how to determine when a zero form is or is not a case of ellipsis to begin with. The inability of the speaker to respond *siranai* ‘I don’t know’ in regard to an item of questioned information is itself precisely evidence that the information in question has been ellipted.

- (51) a. *Gooka-na syokuzi ga de-ta.*  
 luxurious meal NOM come.out-PST  
 'A luxurious meal was served.'  
**x-ga deru** 'x comes out (=is served, is provided, is published, etc.)'
- b. *Densya ga eki o de-ta.*  
 train NOM station ACC leave-PST  
 'The train left the station.'  
**x-ga y-o deru** 'x leaves y'
- c. *Kono miti wa ekimae no hiroba ni de-ru.*  
 this road TOP station.front GEN plaza GOAL emerge-NPST  
 'This road emerges on (takes one to) the plaza in front of the station.'  
**x-ga y-ni deru** 'x emerges on y'
- d. *Imooto ga terebi ni de-ta.*  
 little.sister NOM TV GOAL appear-PST  
 'My little sister appeared on TV.'  
**x-ga y-ni deru** 'x appears in/on y'

The distinction between the argument structure of (51b) and (51c, d) is clear from the different case marker on the second argument – *o* in the former case, and *ni* in the latter – suggesting that two different senses of *deru* are involved here that probably must be learned separately. (51c) and (51d) exhibit exactly the same case marking pattern, both with a second argument marked by *ni*, but the semantic content of the noun phrase in the two cases is different enough – a physical location in the former case, a form of media in the latter – that dictionaries typically categorize these as separate “meanings” of the verb *deru*.

A more objective basis can be found for making a distinction such as this in cases where a single case marker corresponds to a distinct case marker in a similar, but alternating case pattern such as the pairs in (52) and (53) (cf. Fillmore 1968, Kageyama 1980, Pinker 1989).

- (52) a. *Yane ni aopenki o nut-ta.*  
 roof GOAL blue.paint ACC paint-PST  
 'S/he painted blue paint on the roof.'  
**x-ga y-ni z-o nuru** 'x paints y on z'
- b. *Yane o aopenki de nut-ta.*  
 roof ACC blue.paint INST paint-PST  
 'S/he painted the roof with blue paint.'  
**x-ga y-o (z-de) nuru** 'x paints z with y'

- (53) a. *Syoogakusei ni eigo o osie-tei-ru.*  
 elementary.students DAT English ACC teach-PROG-NPST  
 ‘S/he is teaching English to elementary school students.’  
**x-ga [y-ni] z-o osieru** ‘x teaches z to y’
- b. *Syoogakusei o osie-tei-ru.*  
 elementary.students ACC teach-PROG-NPST  
 ‘S/he is teaching elementary school students.’  
**x-ga z-o osieru** ‘x teaches y’

The *o*-marked noun phrases *aopenki o* ‘blue paint’ and *yane o* ‘roof’ in (52a) and (52b) not only correspond to different “kinds” of things in a subjective sense – a material in the former case, a physical location in the latter – but the former occurs together with a noun phrase receiving instrumental *de*-marking in (52b) whereas the latter occurs together with a noun phrase receiving goal *ni*-marking in (52a). Similarly, of the two *o*-marked noun phrases *eigo o* ‘English’ and *syoogakusei o* ‘elementary students’ in (53a) and (53b), the former occurs together with a noun phrase receiving dative *ni*-marking in (53a), whereas the latter exhibits no such correlation.

Conversely, there are situations where multiple argument structures associated with a single predicate should not be seen as corresponding to distinct senses of the predicate. This may happen when a single noun phrase has a plural sense to it that may be seen to fill two distinct participant roles in an event. The two-place structure of *ni(te-i)ru* ‘resemble,’ for example may be filled by a single plural argument, and the three-place structure of a predicate such as *torikaeru* ‘replace/exchange’ may be satisfied by two noun phrases when the second, accusative-marked argument expresses a class comprising multiple items.

- (54) a. *Ano ko wa oya ni/to yoku ni-tei-ru.*  
 that child TOP parent DAT/COM very resemble-STAT-NPST  
 ‘That child looks very much like its parent.’
- b. *Ano oyako wa yoku ni-tei-ru.*  
 that parent.child TOP very resemble-STAT-NPST  
 ‘That parent and child look very much alike.’  
**x-ga y-ni/to niru** ‘x resembles y’
- (55) a. *Tatami o zyuutan ni/to torikae-ta.*  
 straw.mat ACC carpet DAT/COM replace-PST  
 ‘We replaced the tatami floor with carpet.’
- b. *Zyuutan o torikae-ta.*  
 carpet ACC replace-PST  
 ‘We replaced the carpet.’  
**x-ga y-o z-ni/to torikaeru** ‘x replaces y with z’

Noun phrases appearing as modifiers of noun phrase arguments may also implicitly fill another argument slot, as in the following example with *ubau* ‘take from.’ (Recall from example (48) in Section 4 that the *kara*-marked noun phrase with *ubau* tests as an argument.)

- (56)     *Titioya no zenzaisan o ubat-ta.*  
          father GEN entire-fortune ACC rob-PST  
          ‘He robbed (misappropriated) his father’s entire fortune.’  
          **x-ga y-o z-kara ubau** ‘x robs y from z/robs z of y’

*Titioya* ‘father’ modifying *zenzaisan* ‘entire fortune’ may here be seen as filling the *z-kara* slot in the argument structure of *ubau* ‘rob.’ This can be seen from considering a case such as (57) where speaker A uses a pronoun *sore* ‘it’ with reference to a previously mentioned *titioya no zenzaisan*. The possibility of a follow-up question from B asking speaker A to fill in the relevant information in a *z-kara* phrase, and A’s inability to deny such information, indicates that such a slot is operative in argument structure.

- (57) A: *Sore o zenbu ubat-ta rasii.* → B: *Dare kara?*  
          that ACC all rob-PST EVID                who ABL  
          ‘It seems that s/he robbed all of it.’                ‘(From) whom?’  
          → A: *#Sir-ana-i.*  
                  know-NEG-NPST  
                  ‘I don’t know.’

The possibility of plural noun phrases or noun phrases with modifiers filling multiple argument roles, as seen in these examples, underlines the fact that it is ultimately at the level of meaning that the valency of a predicate must be satisfied, as opposed to the number of distinct syntactic entities that may potentially be present in the clause of a predicate. At the same time, the alternative possibility of filling the *z* slot in *z-kara* by means of a modifier on another argument in this way and thereby reducing the number of syntactic slots in argument structure points both to the marginal status of *kara* as an argument marker and to the general constraint noted earlier to limit valency to two argument places.

## 5 Argument-like adjuncts

As opposed to arguments, which represent entities that *must* be conceptualized as participating in the situation expressed by a predicate, adjuncts represent entities that *may* optionally be seen to participate in that situation, as manifested by the

broadest constellation of case-marked noun phrases (case roles) that may co-occur with a predicate. Examples of adjuncts include co-participants marked by comitative *to* ‘together with’; instruments marked by *de* ‘with, using’; causes marked by *de* ‘because of, due to’; time phrases variously marked by *ni* ‘at (point in time),’ zero ‘for (amount of time),’ *de* ‘within (amount of time),’ *kara* ‘from (point in time),’ and *made* ‘until (point in time)’; and certain varieties of location such as seen earlier in Section 4.

While adjuncts are optional in their occurrence with a predicate, the range and type of adjuncts that may occur with a predicate is determined (“subcategorized”) by the meaning of a predicate just as in the case of arguments. A particularly important example of this is the way locatives expressing place of occurrence of a situation are subcategorized into two types according to whether the situation in question is an event, in which case the location is marked with *de*, or a state of existence, in which case the location is marked with *ni*.

- (58) *Kono mati ni yasuku tomar-e-ru minsyuku ga ar-u.*  
 this town LOC cheaply stay-POT-NPST hostels NOM exist-NPST  
 ‘There are hostels you can stay at cheaply in this town.’

- (59) *Sakkaabu no sensyu ga maiasa tikaku no kooen*  
 soccer.club GEN athletes NOM every.morning nearby GEN park  
*de rensyuu o si-tei-ru.*  
 LOC practice ACC do-PROG-NPST  
 ‘The soccer club members practice every morning at a park near here.’

Based on its behavior with these locative markers, the verb *aru* exhibits two distinct senses of ‘exist’ and ‘happen,’ as seen by comparing (58) with (60).

- (60) *Asita kono mati de zisin no hinankunren ga*  
 tomorrow this town LOC earthquake evacuation.drill NOM  
*ar-u.*  
 happen-NPST  
 ‘There will be an earthquake evacuation drill in this town tomorrow.’

Although application of the *siranai* test shows that *ni*-marked locations sometimes have argument status, sometimes adjunct status (see Section 4), *de*-marked locations consistently exhibit adjunct status under this test, as do temporal phrases in general along with all other types of case-marked noun phrases listed at the outset of this section.

- (61) a. A: *Sakkaabu no sensyu ga maiasa rensyuu o*  
 soccer.club GEN athletes NOM every.morning practice ACC  
*si-tei-ru rasii.*  
 do-PROG-NPST EVID  
 'It appears that the soccer club holds practice every morning.'  
 → B: *Doko de?* → A: *Sir-ana-i.*  
 where LOC know-NEG-NPST  
 'Where?' 'I don't know.'
- b. *Zyugyoo ga owat-ta rasii.* → B: *Nanzi ni?*  
 class NOM end-PST EVID what.time TMP  
 'It seems the class ended.' 'What time?'  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 'I don't know.'

There is, however, a class of examples, parallel to English examples discussed in Grimshaw and Vikner (1993), where locative or temporal phrases apparently cannot be omitted without creating incoherence.

- (62) a. *Kono otera wa \*(8seiki ni) tate-rare-ta.*  
 this temple TOP 8th.century TMP build-PASS-PST  
 'This temple was built \*(in the 8th century).'
- b. *Uti no tyoonan wa \*(Tookyoo de) umare-ta.*  
 our GEN first.son TOP Tokyo LOC be.born-PST  
 'Our first son was born \*(in Tokyo).'

The strong sense of ellipsis felt in the absence of the locative and temporal phrases here might be taken as evidence for their argument status, but several facts suggest otherwise. First, the *siranai* test as applied to the predicates *taterareru* 'be built' and *umareru* 'be born' does not point to their status as arguments in general.

- (63) a. A: *Otera ga tate-ra-ta rasii.* → B: *Itu?*  
 temple NOM build-PASS-PST EVID when  
 'It appears that a temple was built.' 'When?'  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 'I don't know.'

- b. A: *Tyoonan ga umare-ta rasii.* → B: *Doko de?*  
 first.son NOM be.born-PST EVID where LOC  
 ‘It seems that a first son was born.’ ‘Where?’  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’

Secondly, the sense of ellipsis created here can be ameliorated by any of a number of adjunct-like expressions, not limited to temporal or locative phrases.

- (64) a. *Kono otera wa \*(tennoo no meirei de, Ganzin o*  
 this temple TOP emperor GEN order INST Ganjin ACC  
*kinen-su-ru tame-ni) tate-rare-ta.*  
 commemorate-NPST PURP build-PASS-PST  
 This temple was built \*(by order of the emperor, to commemorate Ganjin).  
 b. *Uti no tyoonan wa \*(seizyoo bunben de, oyayubi o*  
 our GEN first.son TOP normal delivery INST thumb ACC  
*syabutta zyootai de) umare-ta.*  
 suck-PST condition INST be.born-PST  
 ‘Our first son was born \*(by normal delivery, with his thumb in his mouth).’

The ellipsis felt in examples like (62) thus seems to have to do with the need for some kind of extra material beyond the predicate alone when it is used with topical noun phrases as in these examples. As proposed by Goldberg and Ackerman (2001), this is probably best explained by a pragmatic, Gricean principle that utterances be informative in some way. Given that the existence of a building or person is presupposed by the use of topical *wa* in (62), and that it can be inferred from this that the building or person in question was at some time built or born, the predicates alone do not here provide any information beyond what the hearer already has.<sup>13</sup> This makes it necessary that further information be provided in some form that includes information about when or where the building or person came into being, but is not limited to these in a way that would be expected of true arguments. Not all noun phrases that

<sup>13</sup> Related to this is the fact pointed out by a reviewer that (62a) is acceptable without a temporal phrase when the predicate is changed to a negative stative form (*Kono otera wa taterareteinai* ‘This temple has not been built’) and (62b) is acceptable without a locative phrase when the subject is marked by nominative *ga* rather than topical *wa* (*Uti no tyoonan ga umareta* ‘A(first) son was born (to us).’). Both of these are cases where the implication of existence is lacking, either by being overtly canceled by a negative form or by existence being overtly asserted through use of the nominative case particle, conveying a sense of first mention.



contribute information required to coherently interpret a clause, therefore, necessarily have argument status.

Conversely, there are some limited examples of clause constituents other than noun phrases that exhibit argument-like behavior. Predicates such as *hurumau* ‘behave’ and certain uses of *atukau* ‘handle’ and *motenasu* ‘treat’ appear to include in their argument structure adverbial constituents that may take the gerund *KU* form of adjectives, the gerund *NI* or *TO* form of the copula, or even the gerund *TE* form of verbs, rather than the typical pattern of noun phrase plus case particle.<sup>14</sup>

- (65) a. *Kare wa ano ba de sinsi-rasi-ku hurumat-ta rasii.*  
 he TOP that situation LOC gentleman-like-GER behave-PST  
 EVID  
 ‘It seems he behaved gentlemanly in that situation.’
- b. *Ano mise de wa kyaku o yasasi-ku/ teinei-ni/ sabetu-si-te atukat-tei-ru rasii.*  
 that store LOC TOP customers ACC kind-GER polite-DAT  
 discriminate-GER treat-PROG-NPST EVID  
 ‘At that store they seem to treat customers nicely/politely/in a discriminatory way.’

The argument status of these adverbial constituents follows from the fact that a speaker using such predicates cannot disavow knowledge of an ellipted such adverbial constituent if questioned.

- (66) a. A: *Kare wa ano ba de (...) hurumat-ta rasii.*<sup>15</sup>  
 he TOP that situation LOC behave-PST EVID  
 ‘It seems he behaved (...) in that situation.’  
 → B: *Dono-yoo-ni?* → A: *#Sir-ana-i.*  
 how know-NEG-NPST  
 ‘How?’ ‘I don’t know.’  
**x-ga Adv-ku/ni hurumau** ‘x behaves Adv-ly’

<sup>14</sup> I am grateful to Setsuko Arita (p.c.) for pointing out to me the existence of predicates such as these.

<sup>15</sup> As pointed out by a reviewer, the opening statement by A in both examples (66a) and (66b) is unacceptable with the information in question totally ellipted. Here it is more natural to imagine a somewhat analogous situation where the information in question (indicated as (...)) is uttered in A’s opening statement but, for some reason, B is not able to hear it clearly and must therefore request the information by means of the questions indicated.

- x-ga y-o Adv-ku/ni/Verb-te atukau** ‘x treats y Adv-ly/in a Verb way’

that are normally reserved for nouns.

## 6 Argument structure and subjecthood in Japanese

of this test.<sup>16</sup>

as an antecedent for the reflexive pronoun *zibun* ‘self,’ the ability to trigger honorific

**16** The idea that subject is a notion foreign to Japanese grammar that has been imposed on it under the influence of western languages has a long and undying history in the native Japanese grammatical tradition (see, for example, Kanaya 2002), but is based on a total lack of regard for the notion of argument structure.

predicate forms, and a preferred status in interpreting various zero noun phenomena (Shibatani 1977, Shibatani 1985, Koizumi 2008). These are normally properties observed for standard *ga*-marked subjects such as *Mary ga* in (67a), the only antecedent possible in its clause for *zibun* ‘self,’ or *Tanaka sensei ga* in (67b), the only possible target in its clause for the honorific form  $oV_{inf}$  *ni-naru*.

- (67) a. *Mary ga Jane ni kagami ni utut-ta zibun (no*  
 Mary NOM Jane DAT mirror LOC reflect-PST self GEN  
*sugata) o mise-ta. (zibun = Mary)*  
 form ACC show-PST  
 ‘Mary showed Jane herself (=Mary) reflected in the mirror.’
- b. *Tanaka sensei ga maiasa okosantati o gakkoo*  
 Tanaka Prof. NOM every.morning children ACC school  
*made kuruma de ookurininar-imas-u.*  
 as.far.as car INST send.HON-POL-NPST  
 ‘Prof. Tanaka drives his children to school every morning.’

But in the examples in (68), it is noun phrases case marked by dative *ni*, locative *de*, and ablative *kara* that exhibit such subject-like properties, here the ability in each example to serve as the target of honorification and additionally, in (68a), the ability to serve as the antecedent to *zibun* ‘self’ (the additional topic *wa* marking on these noun phrases in (68a) and (68b) is irrelevant to case marking in argument structure).

- (68) a. *Tanaka-sensei ni wa go-zibun no ketten ga yoku*  
 Tanaka Prof. DAT TOP HON-self GEN fault NOM well  
*owakarinar-imas-u (zibun = Tanaka).*  
 understand.HON-POL-NPST  
 ‘Prof. Tanaka understands (honorific) well his own (lit., self’s) (honorific) faults.’
- b. *Keisatu de wa zyuumin ni tyuui o*  
 police LOC TOP public DAT caution ACC  
*yobikake-teirassya-imas-u.*  
 call.on-PROG.HON-POL-NPST  
 ‘The police are calling on (honorific) the public to exercise caution.’
- c. *Sensei kara gakubutyoo ni zizyoo o*  
 professor ABL dean DAT situation ACC  
*ohanasininatte-kudasa-imasen ka.*  
 speak.HON-give.to.me-POL.NEG.NPST Q  
 ‘Professor, won’t you explain the situation to the dean (for me)?’

In (68b) and (68c), the absence of a *ga*-marked subject appears particularly problematic because there is no other *ga*-marked argument present in the argument structure of each predicate, an apparent disconfirmation of our claim that all predicates have a *ga*-marked argument in their argument structure (compare (68a), which at least has the *ga*-marked argument *ketten ga* ‘fault NOM’ in its argument structure).

While constituting counterexamples, however, these turn out to be minor counterexamples because the *ni*, *de*, and *kara* marking in these cases in fact alternates with *ga* (Kishimoto 2016). This is illustrated in the following examples involving these predicates, set in focused or subordinate contexts so as to allow the case marking of arguments to emerge clearly without the interference of the topic marker *wa*.

- (69) a. *Haha ga eigo ga wakar-u no wa*  
 mother NOM English NOM understand-NPST NMLZ TOP  
*kookoo no koro amerika ni sun-dei-ta kara*  
 high.school GEN time America LOC live-PROG-PST because  
*da.*  
 COP.NPST  
 ‘The reason my mother understands English is that she lived in American when she was in high school.’
- b. *Keisatu ga zyumin ni tyuu o yobikake-tei-ru*  
 police NOM public DAT caution ACC call.on-PROG-NPST  
*no wa, saikin toonanziken ga*  
 NMLZ TOP recently robbery.incidents NOM  
*tahatu-si-tei-ru kara da.*  
 many.occur-PROG-NPST because COP.NPST  
 ‘The reason that the police are calling for caution is that many incidents of robbery have recently been occurring.’
- c. *Sensei ga gakubutyoo ni zizyoo o*  
 professor NOM dean DAT situation ACC  
*hanasite-kudasa-imasen ka.*  
 speak-give.to.me-POL.NEG.NPST Q  
 ‘Won’t you (professor) (be the one to) explain the situation to the dean for me?’

This requires a modification of the definition of subject proposed at the outset of this section: subject is the argument that is marked by *ga* in argument structure or whose case marking is capable of alternating with *ga*.

But this now raises another problem. As seen from examples (68a) and (69a), predicates such as *wakaru* ‘understand’ exhibit two argument structures arising from the possibility of one of the arguments alternating in its marking between *ni* and *ga*: **x-ni/ga y-ga wakaru** ‘x understands y,’ an alternation seen also in other predicates

such as *dekiru* ‘be able (to do),’ *iru* ‘need,’ and *aru* ‘exist, have.’ The second of these argument structures is the same double nominative pattern seen earlier in Section 4 for predicates like *suki-da* ‘like, have an affection for,’ and also *hosii* ‘want’ and *kirai-da* ‘dislike,’ which do not exhibit an alternation with *ni*: **x-ga y-ga suki-da** ‘x likes y.’ Both x and y for all these predicates can be easily shown to be arguments by applying the *siranai* test, which confirms that all of these are two-place predicates, but the double case marking makes it impossible to identify which of x and y is the subject on the basis of case marking alone.

Identification of the subject argument is nevertheless possible on the basis of numerous behavioral traits that distinguish x and y in double nominative constructions of this type. These include, on the one hand, subject-like properties mentioned earlier in this section such as serving as the antecedent for *zibun* ‘self’ and triggering honorific marking and, on the other, various object-like properties such as the possibility of alternating with accusative *o* marking or, with certain predicates, alternating with *no koto ga* (Koizumi 2008). In the case of *suki-da* ‘like, feel affection for,’ for example, the former traits are associated with the *ga*-marked noun phrase representing the experiencer of the emotion and the latter with the *ga*-marked noun phrase that represents the target of the emotion, making it possible to distinguish the subject from non-subject even in cases where both noun phrase arguments are animate, as illustrated in (70).

- (70) a. *Yamaguti-sensei ga Mari ga o-suki-na no wa*  
 Prof. Yamaguchi NOM Mari NOM HON-like-COP NMLZ TOP  
*syuuti-no-toori da.*  
 common.knowledge COP.NPST  
 ‘The fact that Prof. Yamaguchi likes Mari is a well-known fact.’ (Prof. Y=subject)
- b. *Ken ga Mari {ga/ o/ no koto ga} suki na no*  
 Ken NOM Mari NOM ACC GEN fact NOM like COP NMLZ  
*wa syuuti-no-toori da.*  
 TOP common.knowledge COP.NPST  
 ‘The fact that Ken likes Mari is a well-known fact.’ (Mari=non-subject)

In the absence of all other indications, two *ga*-marked animate noun phrases will at least differ in the order they occur in, so that, all other things being equal, it will be the first of two *ga*-marked animate noun phrases appearing on the surface that is assigned the status of subject – i.e., in the case of the predicate *suki-da* ‘like, have affection for,’ the one that is understood as the experiencer of the emotion. Even with double nominative marking of this type, therefore, there are multiple properties converging to single out one argument as exhibiting unique properties that allow it to be assigned the role of subject.

The situation is quite different, however, with another multiple *ga* pattern that must be distinguished from the *suki-da* type pattern. That is the class of examples represented in (71), including a famous elephant example from Mikami (1960). While the default pattern these exhibit in main clauses is *x-wa y-ga*, the double nominative construction emerges when they are placed in subordinate contexts that disallow the topic particle *wa*, as in (72).<sup>17</sup>

- (71) a. *Zoo wa hana ga naga-i.* (Mikami 1960)  
 elephant TOP nose NOM be.long-NPST  
 ‘Elephants have long noses (lit., as for elephants, (their) noses are long).’
- b. *Sobo wa saikin taityoo ga waru-i.*  
 grandmother TOP recently body.condition NOM be.bad-NPST  
 ‘My grandmother, (her) health has not been good recently.’
- (72) a. *Zoo ga hana ga naga-i no wa sinkaron*  
 elephant NOM nose NOM be.long-NPST NMLZ TOP evolution  
*ni sono riyuu o motome-ru koto ga deki-ru*  
 GOAL its reason ACC seek-NPST COMP NOM be.able-NPST  
*daroo.*  
 TENT  
 ‘The reason that elephants have long noses probably can be found in evolution.’
- b. *Sobo ga saikin taityoo ga waru-i*  
 grandmother NOM recently body.condition NOM be.bad-NPST  
*no wa tyanto syokuzi o tot-tei-na-i kara*  
 COMP TOP properly meals ACC take-PROG-NEG-NPST because  
*da.*  
 COP.NPST  
 ‘The reason my grandmother’s health has not been good recently is that she hasn’t been eating properly.’

Application of the *siranai* test readily indicates that both *ga*-marked noun phrases here are arguments, as indeed all *ga*-marked noun phrases in Japanese turn out to be when this test is applied:

<sup>17</sup> It is possible for the double nominative marking to occur in main clause contexts as well, but the first of a series of *ga*-marked nouns with predicates that express (relatively) permanent states is in main clause contexts normally given a strong focus reading and is therefore in more usual “unmarked” contexts given a topic *wa* marking. Such a focus reading does not arise in subordinate contexts.

- (73) a. A: *Hana ga naga-i rasii.* → B: *Nani ga?*  
 Nose NOM be.long-NPST EVID what NOM  
 ‘It seems that ( ) nose is long.’ ‘What (i.e., of what)?’  
 → A: *#Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’
- b. A: *Zoo wa naga-i rasii.*  
 elephant TOP be.long-NPST EVID  
 ‘It seems that elephant ( ) is long.’  
 → B: *Nani ga?* → A: *#Sir-ana-i.*  
 what NOM know-NEG-NPST  
 ‘What (i.e., elephant’s what)?’ ‘I don’t know.’

Unlike the *suki-da* ‘like, have affection for’ construction type, however, neither nominative here alternates with accusative *o* or with *no koto ga*. Furthermore, potentially any of the *ga*-marked nominals here may exhibit subject-like traits such as triggering honorification, as seen in (74).

- (74) a. *Ono-sensei (ga) wa okusan ga o-kirei da.*  
 Prof. Ono (NOM) TOP wife NOM HON-pretty COP.NPST  
 ‘Prof. Ono’s wife is pretty (lit., Prof. Ono, (his) wife is pretty).’
- b. *Kakehi-sensei (ga) wa hige ga go-rippa da.*  
 Prof. Kakehi (NOM) TOP beard NOM HON-splendid COP.NPST  
 ‘Prof. Kakehi has a splendid beard (lit., Prof. Kakehi, (his) beard is splendid).’

An even more drastic difference between multiple nominative constructions of this type and the *suki-da* ‘like, have affection for’ construction type is that the number of nominatives here is not limited to two, but can be three or more, without any apparent limit (Kuno 1973).

- (75) *Sensinkoku (ga) wa zyakunensoo ga*  
 industrialized.countries (NOM) TOP young.generation NOM  
*situgyooritu ga taka-i.*  
 unemployment.rate NOM be.high-NPST  
 ‘The unemployment rate is high among youth in advanced countries (lit., industrialized countries, their youth, their unemployment rate is high).’

Which nominative noun phrase is then the subject in such constructions? As a first step toward answering this, consider the meaning relationship between each noun phrase and the predicate in these cases. In Mikami’s famous elephant example in

(71a), what has the property of being long is the nose, not the elephant. The elephant, on the other hand, has the property of 'long-nosedness' as opposed to 'long-ness.' What this suggests is that each noun phrase in these constructions is associated with a different property, and indeed a different predicate expressing that property. As proposed in Shibatani (1990), this can be accounted for by treating these constructions as in reality not consisting of single clauses, but rather multiple clauses embedded within each other, as indicated by the nested bracket pairs in the following:

- (76) a. Zoo                    ga                    [hana                    ga                    [naga-i]]                    (Cf. (71a))  
elephant    NOM    nose                    NOM    be.long-NPST
- b. Sobo                    ga                    [taityoo                    ga                    [waru-i]]                    (Cf. (71b))  
grandmother    NOM    body.condition    NOM    be.bad-NPST
- c. Sensinkoku                    ga                    [zyakunensoo                    ga                     
industrialized.countries    NOM    young.generation    NOM     
[situgyooritu                    ga                    [taka-i]]]                    (Cf. (75))  
unemployment.rate    NOM    be.high-NPST

Each *ga*-marked noun phrase here is matched with a predicate that consists not merely of the final predicate, but a *combination* of the final predicate and any other noun phrase intervening between that noun phrase and the final predicate. In (76a), for example, *hana* ‘nose’ is matched with the predicate *nagai* ‘be long,’ but *zoo* ‘elephant’ is matched with a predicate that itself consists of the clause [*hana ga nagai*] ‘nose is long,’ and similarly for (76b) and (76c). Assuming that each of the *ga*-marked noun phrases in these constructions is a subject, there would be no more than one subject per clause. The subject of the sentence as a whole would then be the *ga*-marked noun phrase in the highest clause – i. e., *zoo* ‘elephant’ in (76a) and *sensinkoku* ‘industrialized countries’ in (76c).

While these constructions do not therefore pose a problem of *multiple* subjects per clause, treating them as multi-clause structures raises other questions. We saw earlier that all *ga*-marked noun phrases exhibit argument status by the *siranai* test, so this means entertaining the possibility of clauses, as opposed to verbs and other lexical predicates, taking arguments. What does it mean for a clause to take an argument, and what kinds of clauses do so? Clearly, not every clause requires an argument outside of that clause, because then the larger clause including that argument would itself require yet another argument, and so forth, leading to an infinite stacking of clauses higher and higher, without end. It is therefore necessary to find a way to delimit those clauses that take arguments from those that do not that will allow us to extend the idea of argument structure in a natural way from the kind of argument structure we have observed for lexical predicates. Ideally, this would be done in a way that preserves the structural connection between arguments and lexically specified predicates while allowing for a predicate to have an open-ended internal structure



containing constituents that are not necessarily lexically specified, such as the *z* and *Pred* slots in clauses of the form [*z-ga Pred*] (e. g., [*hana ga nagai*] ‘nose is long’) in (76) above. There is in fact a structure in Japanese that, both in terms of structure and meaning, provides a template that makes both of these steps possible, and that is the copular predicate with argument structure *x-ga y-da* ‘*x* is *y*.’

Despite appearances, *x-ga y-da* ‘*x* is *y*’ is a one-place predicate pattern taking the single argument *x-ga*, where the noun phrase *y* is not an argument (as evidenced by its lack of case marking) but forms part of the predicate together with the copula *da*, a ‘bound’ form that cannot freely occur alone. The form *y-da* ‘is *y*’ is therefore unique among predicates we have considered so far in itself including a ‘slot’ that is not lexically specified, but must be filled by a noun phrase of some kind.

- (77) *Akira ga (gakusei)-da.*  
 Akira NOM student-COP.NPST  
 ‘Akira is a student (lit., it is Akira that is a student).’

The noun phrase *y* in *y-da* may itself be modified by a clause containing *ga*-marked noun phrase arguments, forming a relative clause construction of which it is the head, indicated by the round parentheses in (78):

- (78) *Akira ga ([itiban atama ga i-i] gakusei)-da.*  
 Akira NOM number.one head NOM be.good-NPST student-COP.NPST  
 ‘Akira is the smartest student (lit., it is Akira who is the student such that head is best).’

The noun phrase marked in round parentheses above is not itself a clause, but merely part of the predicate *y-da* that forms the main clause together with *Taroo ga*. In the construction that results, [*itiban atama ga ii*] is therefore a clause embedded one level lower than the main clause in a way parallel to the embedded clause structure proposed earlier for multiple nominative constructions, as can be seen by comparing (78) and (79):

- (79) *Akira ga [itiban atama ga i-i].*  
 Akira NOM number.one head NOM be.good-NPST  
 ‘Akira is the smartest (lit. it is Akira who is most smart).’

This structural parallel between multiple nominative constructions (‘*x* is such that (its) *y* is Predicate’) and relative clause constructions (‘*x* is a thing such that (its) *y* is Predicate’) is a systematic one extending across a large number of multiple nominative constructions.

- (80) a. *Zoo ga [hana ga [naga-i]]*  
*Zoo ga ([hana ga [naga-i]] doobutu)- da*  
 elephant NOM nose NOM be.long-NPST animal COP.NPST  
 ‘The elephant (is the animal that) has a long nose.’
- b. *Zyakunensoo ga [situgyooritu ga [taka-i]]*  
*Zyakunensoo ga ([situgyooritu ga [taka-i]]*  
 young.generation NOM unemployment.rate NOM be.high-NPST  
*sedai)- da.*  
 generation COP.NPST  
 ‘The young (are the generation where) the unemployment rate is high.’
- c. *Sensinkoku ga [zyakunensoo ga*  
*Sensinkoku ga ([zyakunensoo ga*  
 industrialized.countries NOM young.generation NOM  
*[situgyooritu ga [taka-i]]]*  
*[situgyooritu ga [taka-i]]] kuni)- da.*  
 unemployment.rate NOM be.high-NPST countries COP.NPST  
 ‘Industrialized countries (are the countries where) the youth, their unemployment rate is high.’

The nouns *doobutu* ‘animal,’ *sedai* ‘generation,’ and *kuni* ‘country’ are meant here only as illustrative, as the multiple nominative constructions in each case do not state that the highest *ga*-marked noun phrase is an animal, generation, country, etc. All that is necessary for our purposes is that the embedded clause in each case be understood as predicating of the highest *ga*-marked noun phrase that it be an *entity* that is such that it has the property in question. The more general parallel can be represented as in (81), where the noun *mono* ‘thing’ is intended to represent this entity.

- (81) a. *Zoo ga ([hana ga [naga-i]] mono)-da*  
 ‘The elephant (is the entity such that) its nose is long.’
- b. *Zyakunensoo ga ([situgyooritu ga [taka-i]] mono)-da.*  
 ‘The young (are the entity such that) their unemployment rate is high.’
- c. *Sensinkoku ga ([zyakunensoo ga [situgyooritu ga [taka-i]]) mono)-da.*  
 ‘Industrialized countries (are the entity such that) their youth, their unemployment rate is high.’

Just as the *y-da* construction requires an *x-ga* subject argument, then, so will the predicate following the uppermost *x-ga* in the corresponding multiple nominative construction take *x-ga* as its subject argument.

Not all multiple nominative constructions, however, can be represented as in (81). There is a second group of multiple nominative constructions, illustrated in (82),

that have structures identical in their embedding pattern to the examples in (80), but mean something other than ‘x is an *entity* such that its y is Predicate.’

- (82) a. *Sobo ga [taityoo ga [waru-i]]*  
 grandmother NOM body.condition NOM be.bad-NPST  
 ‘My grandmother, (her) health is not good.’
- b. *Mitiko ga [okaasan ga [nakunat-ta]]*  
 Michiko NOM mother NOM die-PST  
 ‘Michiko, (her) grandmother died.’
- c. *Me ga [gomi ga [hait-ta]]*<sup>18</sup>  
 eye NOM garbage NOM enter-PST  
 ‘My eye, something got in it.’
- d. *Totuzen sakura ga [eda ga [ore-ta]]*  
 suddenly cherry.tree NOM branch NOM break-PST  
 ‘All of a sudden, the cherry tree, its branch broke.’

As pointed out in Kobayashi (2007), the clause following the highest *x-ga* in these constructions does not express a property that picks out *x* from other individuals of the same type, but rather a property that picks out *x* at a particular point in time as distinct from properties it has at other points in time. The properties expressed in (82) correspond, in other words, to “stage-level” properties, as opposed to “individual-level” properties such as those in (80), following the celebrated distinction introduced by Carlson (1989). Stage-level properties are less permanent and more prone to change than the individual-level properties in (80), and we accordingly find a greater predominance of verbs here, as in (82 b, c, d), in contrast to adjectives in the examples in (80), as verbs typically express events that are more changeable in time than adjectives.

What is it then that licenses the highest *x-ga* in constructions like (82) as a subject argument and the *clause* that follows it as a non-lexical predicate? The answer here can again be found in a parallel construction that makes clear the argument status of *x-ga*, namely *x-ga y-da* ‘x is y,’ or alternatively *x-ga y-ni naru* ‘x becomes y,’ where *y* represents not an individual entity but rather the condition or state *of* an individual, roughly expressible by the noun *zyootai* ‘state/condition.’ What we propose is that the argument status of the highest *x-ga* here follows from a parallel in meaning with constructions of type (83) as opposed to those of the type presented in (81).

<sup>18</sup> (82c, d) are due to Ishida (1995), as cited in Kobayashi (2007).

- (83) a. *Sobo ga ([taityoo ga [waru-i]]*  
 grandmother NOM body.condition NOM be.bad-NPST  
*zyootai)-da/ ni nat-ta.*  
 condition-COP.NPST/ DAT become-PST  
 ‘My grandmother (is (in)/has entered a state such that) (her) health is bad.’
- b. *Mitiko ga ([okaasan ga [nakunat-ta]] zyootai)-da.*  
 Michiko NOM mother NOM die-PST condition COP.NPST  
 ‘Michiko (is (in) a state/condition such that) (her) grandmother has died.’
- c. *Me ga ([gomi ga [hait-ta]] zyootai)-da/ ni*  
 eye NOM garbage NOM enter-PST condition COP.NPST/ DAT  
*nat-ta.*  
 become-PST  
 ‘My eye (is (in) a state/condition such that) something has gotten into it.’
- d. *Totuzen sakura ga ([eda ga [ore-ta]] zyootai)*  
 suddenly cherry.tree NOM branch NOM break-PST condition  
*ni nat-ta.*  
 DAT become-PST  
 ‘The cherry tree suddenly (entered a state/condition such that) its branch has broken.’

The highest *ga*-marked noun phrase *sobo-ga* ‘grandmother’ in (83) is, in other words, an argument of the clause *[taityoo ga warui]* ‘health is bad’ in the same way that it is an argument of *[taityoo ga warui]zyootai-da* ‘be (in) a state of health being bad’ or of *[taityoo ga warui]zyootai ni naru* ‘become/enter into a state of health being bad.’ The possibility of a parallel with either of the two patterns *x-ga y-da* ‘x is y’ pattern or *x-ga y-ni naru* ‘x becomes y’ in the case of the constructions in (82), as opposed to only the former in (80), is a reflection of the stage-level nature of the properties in (82), with a degree of non-permanence allowing for the possibility of a verbal paraphrase with the non-stative *y-ni naru* ‘become y’ in contrast to the more stative *y-da* ‘be y’ predicate.

To recapitulate, the ability of clauses of the form *[z-ga Pred]* to function as predicates taking an additional argument *x-ga* is determined by whether or not they have a meaning that parallels the copular structure *[z-ga Pred]y-da*, where *y* represents an entity (in the case of individual-type properties) or a state/condition (in the case of stage-type properties), or, in the case of stage-type properties, the change-of-state structure *[z-ga Pred]y-ni naru*, where *y* represents a state/condition. The ability of clauses of form *[z-ga Pred]* to function as predicates does not therefore follow automatically from their structure, but is governed by conditions on their meaning. That meaning will be determined by the particular lexical items that fill the *z* and *Pred* slots and whether the resulting clause can be understood to express a property that requires an argument in the same way that the copular *y-da* and *y-ni naru* structures do.

Multiple nominative constructions in Japanese thus fall under two main types, one with multiple *ga*-marked noun phrases coexisting in a single clause, both arguments of a single predicate, as in (84), and another with each of the multiple *ga*-marked noun phrases associated with a different clause, as in (85).

- (84)     *Ken ga Mari ga suki da.*  
          Ken NOM Mari NOM like COP.NPST  
          ‘Ken (is the one who) likes Mari.’
- (85) a.   *Zoo ga hana ga naga-i.*  
          elephants NOM nose NOM be.long-NPST  
          ‘(It is) elephants (that) have long noses.’
- b.   *Sobo ga taiyoo ga waru-i.*  
          grandmother NOM body.condition NOM be.bad-NPST  
          ‘My grandmother, her health is bad.’

Constructions of the (84) type are limited to two *ga*-marked arguments, whereas constructions of the (85) type may involve more than two *ga*-marked arguments. Constructions of the (85) type, furthermore, subdivide into two types, illustrated in (85a) and (85b) respectively, according to whether the clause following the highest nominative expresses an individual-level property or a stage-level property of that noun phrase. Despite appearances, none of the multiple nominative construction types poses a challenge to the principle that every clause in Japanese has a unique subject, and further that all occurrences of noun phrases marked by *ga* constitute arguments of their associated predicate, whether that be a lexical predicate or a predicate consisting in itself of a clause.

## 7 Grammatical forms that alter argument structure

In Section 2, we considered the covert role that argument structure plays in tracking entities that are key participants in events or states as they unfold in discourse, a role that is particularly critical in a prodrop language such as Japanese where those entities are not always visible on the surface. In addition to the role it plays in tracking participants across sentence boundaries, argument structure is also central to understanding grammatical processes that operate within a sentence, especially the meanings taken on by a predicate when various morphological affixes – sometimes called auxiliary verbs – are attached. An important subgroup of these affixes has the primary function of altering argument structure, sometimes increasing or decreasing the number of the arguments of predicates to which they are attached. Interpreting the meaning of a complex predicate formed in this way thus requires an awareness

of the argument structure of the main predicate – a structure that is, again, often not seen on the surface – as well as of how the attached affixes do or do not alter that argument structure.

It is common for complex predicates to be formed in Japanese not just from the attachment of a single affix, but several affixes in combination, in which case cumulative effects can be seen on the valency and argument structure of the main predicate. Sometimes those cumulative effects are straightforward, simply a matter of adding up the effects of each of the individual affixes. In other cases, though, the valency of the resulting predicate is different – typically less – than would be expected from simply adding together the contributions of each of the individual affixes. In fact, as we will see in this section, valencies of complex predicates tend to fall within the same range seen for simple lexical predicates in Section 4: they are typically two-place, and rarely more than three-place, in valency. Though these predicates may be morphologically complex, that is, they appear to obey the same constraints on number of arguments that operate for simple predicates, in essence functioning as unitary predicates of a single clause just as do lexically simple predicates. Using the *siranai* test as a tool, this section will take up a select number of representative examples of valency-altering grammatical affixes in Japanese to consider exactly what effects they have on argument structure, both individually and in combination with one another.

The most fundamental mechanism for altering valency in Japanese is seen in the over 300 pairs of morphologically related transitive and intransitive verbs (Jacobsen 1992, 2016, 2017; Matsumoto 2016), some examples of which are given in Table 1, where *n* represents the number of arguments of a predicate.

Table 1

| n=1 (intransitive)                | n=2 (transitive)                    | n=3 (ditransitive) |
|-----------------------------------|-------------------------------------|--------------------|
| <i>ak-u</i> ‘open <sub>in</sub> ’ | <i>ake-ru</i> ‘open <sub>tr</sub> ’ |                    |
| <i>naor-u</i> ‘become fixed’      | <i>naos-u</i> ‘fix’                 |                    |
| <i>agar-u</i> ‘rise’              | <i>age-ru</i> ‘raise’               |                    |

For the predicates in Table 1, the increase in valency from intransitive to transitive is 1 → 2 (e. g., *mado ga aku* ‘the window opens’ → *Ken ga mado o akeru* ‘Ken opens the window’), but with predicates that have additional arguments beyond agent and theme, such as, for example, a goal argument, the increase in valency between the morphologically intransitive and transitive members of a pair can also be 2 → 3, as seen in Table 2 (e. g., *Booru ga gooru ni hairu* ‘The ball goes into the goal’ → *Sensyu ga booru o gooru ni ireru* ‘The athlete puts the ball into the goal’).

Table 2

| n=1 (intransitive) | n=2 (transitive)                          | n=3 (ditransitive)                        |
|--------------------|-------------------------------------------|-------------------------------------------|
|                    | <i>hair-u</i> 'go in/enter'               | <i>ire-ru</i> 'put in'                    |
|                    | <i>tuk-u</i> 'become attached'            | <i>tuke-ru</i> 'attach'                   |
|                    | <i>atar-u</i> 'hit <sub>in</sub> against' | <i>ate-ru</i> 'hit <sub>tr</sub> against' |

The general relationship between the valency of the transitive and intransitive members of such pairs can be schematized as in (86), where  $n(V_{tr})$  represents the number of arguments of the transitive form and  $n(V_{in})$  represents the number of arguments of the intransitive form.

$$(86) \quad n(V_{tr}) = n(V_{in}) + 1$$

Gaps nevertheless arise in this system of verb pairing where there are intransitive verbs without transitive partners and transitive verbs without intransitive partners, as illustrated in Table 3.

Table 3

| n=1 (intransitive)   | n=2 (transitive)     | n=3 (ditransitive) |
|----------------------|----------------------|--------------------|
| <i>nak-u</i> 'cry'   | ∅                    |                    |
| <i>aruk-u</i> 'walk' | ∅                    |                    |
| ∅                    | <i>nagur-u</i> 'hit' |                    |
| ∅                    | <i>tabe-ru</i> 'eat' |                    |

In such cases, when the need arises to add or subtract participants to or from the set of participants specified in the argument structure of partnerless verbs, the grammar steps in to fill the gap left by the lexicon, providing a valency-increasing causative *sase* form to fill the gap existing in the transitive slot and the valency-decreasing direct passive *rare* form to fill the gap existing in the intransitive slot.

Table 4

| n=1 (intransitive)                 | n=2 (transitive)                         | n=3 (ditransitive) |
|------------------------------------|------------------------------------------|--------------------|
| <i>nak-u</i> ‘cry’                 | ∅ → <i>nak-(s)aseru</i> ‘make/let cry’   |                    |
| <i>aruk-u</i> ‘walk’               | ∅ → <i>aruk-(s)aseru</i> ‘make/let walk’ |                    |
| ∅ → <i>nagur-(r)areru</i> ‘be hit’ | <i>nagur-u</i> ‘hit’                     |                    |
| ∅ → <i>tabe-rareru</i> ‘be eaten’  | <i>tabe-ru</i> ‘eat’                     |                    |

The causative *sase* form may also be appropriated, as the need arises, to fill gaps existing at valencies higher than 2, for example by effecting a valency change of 2 → 3 on an already transitive predicate, as seen in Table 5.<sup>19</sup>

Table 5

| n=1 (intransitive)                           | n=2 (transitive)                                 | n=3 (ditransitive)                      |
|----------------------------------------------|--------------------------------------------------|-----------------------------------------|
| <i>nak-u</i> ‘cry’                           | <i>nak-(s)aseru</i> ‘make/let cry’ <sup>20</sup> |                                         |
| <i>aruk-u</i> ‘walk’                         | <i>aruk-(s)aseru</i> ‘make/let walk’             |                                         |
| <i>nagur-(r)areru</i> ‘be hit’ <sup>21</sup> | <i>nagur-u</i> ‘hit’                             | ∅ → <i>nagur-(s)aseru</i> , ‘make hit’  |
| <i>tabe-rareru</i> ‘be eaten’                | <i>tabe-ru</i> ‘eat’                             | ∅ → <i>tabe-saseru</i> ‘make eat, feed’ |

Changes of valency of 1 → 2, 2 → 1, and 2 → 3 involving causative and direct passive forms are illustrated for *aruku* ‘walk’ and *taberu* ‘eat’ in (87).

<sup>19</sup> In cases where a lexical transitive exists, the causative of the intransitive should in theory be unnecessary, and is in fact often “blocked” (Miyagawa 1984). However, the lexical transitive and causative of the intransitive may also co-exist in those cases where their meanings do not completely overlap – i. e., where a “division of labor” is negotiated between the two. For discussions of the form such division of labor can take, see Shibatani (1976), McCawley (1978), Jacobsen (2017).

<sup>20</sup> The causative affix *(s)ase* has two alternating shapes: following verbs with a consonant-ending stem, it takes the shape *ase*, as in *nak-ase-ru* ‘make/let cry’ and following verbs with a vowel-ending stem, it takes the shape *sase*, as in *tabe-sase-ru* ‘make/let eat.’

<sup>21</sup> Parallel to *(s)ase*, the passive affix *(r)are* has two alternating shapes: following verbs with a consonant-ending stem, it takes the shape *are*, as in *nagur-are-ru* ‘be hit’ and following verbs with a vowel-ending stem, it takes the shape *rare*, as in *tabe-rare-ru* ‘be eaten.’



- (87) a. *Inu ga arui-ta.* →  
 dog NOM walk-PST  
 ‘The dog walked’ →  
*Kainusi ga inu o (kooen de) aruk-(s)ase-ta.* 1→2  
 owner NOM dog ACC (park LOC) walk-CAUS-PST  
 ‘The owner walked the dog (in the park).’
- b. *Nekoga nezumi o tabe-ta.* →  
 cat NOM mouse ACC eat-PST  
 ‘The cat ate the mouse.’ →  
*Nezumi ga (neko ni) tabe-rare-ta.* 2→1  
 mouse NOM cat DAT eat-PASS-PST  
 ‘The mouse was eaten (by the cat).’
- c. *Neko ga nezumi o tabe-ta.*  
 cat NOM mouse ACC eat-PST  
 ‘The cat ate the mouse.’  
 → *Kainusi ga neko ni nezumi o tabe-sase-ta.* 2→3  
 owner NOM cat DAT mouse ACC eat-CAUS-PST  
 → ‘The owner fed the mouse to the cat.’

Although it may appear that there is no decrease in valency in (87b) because both arguments *neko* ‘cat’ and *nezumi* ‘mouse’ of the transitive *taberu* appear with the passive form *tabe-rareru* as well, the demoted agent subject *neko ni* ‘by the cat’ is in fact not an obligatory argument here. The failure of *ni*-marked agents in general to qualify as arguments in these kinds of passive structures, examples of the so-called direct passive, can be shown through application of the *siranai* test, as shown in (88), with resulting argument structures for such passives illustrated in the bold type.

- (88) a. A: *Nezumi ga tabe-rare-ta rasii.*  
 mouse NOM eat-PASS-PST EVID  
 ‘It seems the mouse was eaten.’  
 → B: *Nani/dare ni?* → A: *Sir-ana-i.*  
 what who DAT know-NEG-NPST  
 ‘By what/whom?’ ‘I don’t know.’
- b. A: *Kenji ga nagur-are-ta rasii.* → B: *Dare ni?*  
 Kenji NOM hit-PASS-PST EVID who DAT  
 ‘It seems that Kenji was hit.’ ‘By whom?’  
 → A: *Sir-ana-i.*  
 know-NEG-NPST  
 ‘I don’t know.’  
**y-ga (x-ni) tabe-rare-ru ‘y is eaten (by x)’**  
**y-ga (x-ni) nagur-are-ru ‘y is hit (by x)’**

This is in stark contrast to the robust argument status exhibited by demoted agent subjects in causative constructions, whether marked by dative *ni* or accusative *o*, illustrated in (89).

- (89) a. A: *Kainusi ga aruk-ase-ta rasii.*  
 owner NOM walk-CAUS-PST EVID  
 ‘It seems that the owner made ( ) walk.’  
 → B: *Nani/dare ni/o?* → A: *#Sir-ana-i.*  
 who/what DAT/ACC know-NEG-NPST  
 ‘Made who/what walk?’ ‘I don’t know.’
- b. A: *Kainusi ga nezumi o tabe-sase-ta rasii.*  
 owner NOM mouse ACC eat-CAUS-PST EVID  
 ‘It seems that the owner made ( ) eat the mouse.’  
 → B: *Nani/dare ni?* → A: *#Sir-ana-i.*  
 who/what DAT know-NEG-NPST  
 ‘Made who/what eat (it)?’ ‘I don’t know.’
- y-ga x-o/ni aruk-ase-ru ‘y makes/lets x walk’**  
**y-ga z-ni x-o tabe-sase-ru ‘y makes/lets z eat x’**

Causative *sase* and direct passive *rare* forms thus fill in as functional equivalents for absent transitive and intransitive forms, alternately increasing and decreasing valency in the same way as do standard transitive and intransitive forms as in (90), a distinction clearly confirmed by the difference in argument status exhibited in the *siranai* test by the *ni*-marked demoted subject noun phrases in the two cases.

- (90) a.  $n(V_{sase}) = n(V) + 1$   
 b.  $n(V_{rare_{dir}}) = n(V) - 1$

Taking this one step further, let us consider now what happens when the direct passive and causative forms are combined in the single form *(s)ase-rare*. Given that *(s)ase* increases valency by one and *(r)are* decreases valency by one, as seen in (90), the net result to the valency of a predicate in successively attaching *(s)ase* and then *(r)are* should be zero, as can be calculated by substituting the valencies given in (90) for *(s)ase* and *(r)are* to the relevant parts of the combined causative-passive form, as in (91).

$$(91) \quad n((Vsase)rare) = n(Vsase) - 1 = (n(V) + 1) - 1 = n(V) + 0 = n(V)$$

In fact, not only the valency but the very argument structure of the resulting causative-passive form turns out to be a replica of that of the original predicate. The valency of *tabe-sase-rare-ru* ‘be made to eat’, for example, will be two, just as *taberu* ‘eat’ itself

has a valency of two, and its argument structure will be the case pattern *x-ga y-o*, just as with the latter. This can be seen in a step-by-step derivation of a typical causative-passive example based on this predicate, illustrated in (92).

- (92) a. *Kodomo ga nattoo o tabe-ta.* [n = 2]  
 children NOM fermented.beans ACC eat-PST  
 ‘The children ate *nattoo* (fermented beans).’
- b. *Hahaoya ga kodomo ni nattoo o*  
 mother NOM children DAT fermented.beans ACC  
*tabe-sase-ta.* [n = 2 + 1 = 3]  
 eat-CAUS-PST  
 ‘The mother made the children eat *nattoo*.’
- c. *Kodomo ga (hahaoya ni) nattoo o*  
 children NOM mother DAT fermented.beans ACC  
*tabe-sase-rare-ta.* [n = 3 – 1 = 2]  
 eat-CAUS-PASS-PST  
 ‘The children were made to eat *nattoo* (by their mother).’

Note that the subject in (92c) corresponds not to the *o*-marked noun phrase, but rather the *ni*-marked noun phrase, in (92b).<sup>22</sup> This noun phrase is the subject of (92a) that has been previously “demoted” to *ni*-marked status by causative (*sase*). As seen earlier, such *ni*-marked noun phrases in causative constructions retain their status as arguments, as opposed to *ni*-marked demoted subject noun phrases in direct passive constructions such as (92c), which are in fact adjuncts, as can again be confirmed through application of the *siranai* test.

- (93) *Kodomo ga nattoo o tabe-sase-rare-ta rasii.*  
 children NOM fermented.beans ACC eat-CAUS-PASS-PST EVID  
 ‘It seems that the children were made to eat *nattoo*.’
- B: *Dare ni?* → A: *Sir-ana-i.*  
 who DAT know-NEG-NPST  
 ‘By whom?’ ‘I don’t know.’
- x-ga y-o (z-ni) tabe-sase-rare-ru** ‘x is made to eat y (by z)’

While the argument structure of the causative-passive is the same as that of the original predicate, then, the constellation of possible adjuncts is not the same. There is of

<sup>22</sup> Direct passives in Japanese require that the noun promoted to subject position be an argument in the corresponding non-passive sentence, whether that argument is marked by accusative *o* or dative *ni*, as will be discussed further below.

course also a meaning difference, albeit not one related to argument structure, in this case that the subject of the causative-passive (e.g., (92c)) is not seen as voluntarily participating in the event as it is in the case of the original predicate (e.g., (92a)). That a form which experience shows to be as troublesome to second language learners as the causative-passive may be analyzed in such a straightforward fashion as this is nevertheless testimony to both the necessity and usefulness of taking into account the role of argument structure, both in language theory and practice.

Distinct from the direct passive, which corresponds in basic form and meaning to passive structures found in many western languages, Japanese has a second type of passive shared by relatively few other languages of the world, known as the indirect passive. This second passive type is marked by the same morphological affix (*rare*) as the direct passive but is markedly different from the latter in the effects it has on the valency and argument structure of the predicate to which it is attached, a distinction which again can be made clear by the *siranai* test. In the direct passive, each argument of the passive clause, including the subject, appears somewhere in the argument structure of the corresponding non-passive predicate. The indirect passive, by contrast, introduces an argument in subject position that is distinct from any of the arguments in the argument structure of the corresponding non-passive, as illustrated in the following example formed from the two-place predicate *taberu* ‘eat.’<sup>23</sup>

- (94) *Mari wa (daizi-ni tot-teoi-tei-ta) keeki o Hiroshi ni*  
 Mari TOP carefully take-put-RES-PST cake ACC Hiroshi DAT  
*tabe-rare-tesimat-ta.*  
 eat-PASS-be.inconvenienced-PST  
 ‘Mari (was inconvenienced by) Hiroshi eating the cake (that she had been carefully saving).’

The two noun phrases understood to satisfy the argument structure of *taberu* ‘eat’ are *Hiroshi* and *keeki* ‘cake’, which, in the absence of the passive affix, would appear in the case pattern *Hiroshi ga keeki o taberu* ‘Hiroshi eats cake.’ In the indirect passive construction, the demoted subject *Hiroshi* receives a *ni* marking, just as in the case of direct passives, but the case marking on the accusative *keeki o* remains unchanged. The subject of the indirect passive, *Hanako*, by contrast, has no corresponding noun phrase in the argument structure of *taberu*. Although the subject of such an indirect passive construction will be topicalized in most contexts with *wa*, as Mari is in (94),

<sup>23</sup> The “uniform theory” of Japanese passives proposed in its classic form by Howard and Niyekawa-Howard (1976), argued that apparent differences between the direct and indirect passive types are no more than a surface phenomenon and that the two passive types derive from a deep structure that is fundamentally the same. Reconciling the difference in valency between the two passive types in this theory depends, however, on a dubious technical move by which the surface argument of the direct passive is double counted as two arguments in deep structure.

the underlying case role here is nominative, as can be seen in the *ga* marking that surfaces on a question phrase used to elicit information about the subject when it is ellipsed, as in (95). As expected from its nominative case, this noun phrase is an argument of its passive predicate, something that can easily be confirmed by application of the *siranai* test.

- (95) *Keeki o tabe-rare-tesimat-ta rasii.*  
 cake ACC eat-PASS-be.inconvenienced-PASS EVID  
 ‘It seems that ( ) had his/her cake eaten.’  
 → B: *Dare ga?* → A: *#Sir-ana-i.*  
           who NOM know-NEG-NPST  
           ‘Who (did)?’           ‘I don’t know.’

The *ni*-marked noun phrase corresponding to the demoted non-passive subject does not, by contrast, exhibit argument characteristics by the usual test, thus yielding the argument structure indicated in (96).

- (96) *Mari wa (daizi-ni tot-teoi-tei-ta) keeki o*  
 Mari TOP carefully take-put-RES-PST cake ACC  
*tabe-rare-tesimat-ta rasii.*  
 eat-PASS-be.inconvenienced-PST EVID  
 ‘It seems that Mari had the cake that she had been carefully saving eaten.’  
 → B: *Dare ni?* → A: *Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘By whom?’           ‘I don’t know.’  
**w-ga (x-ni) y-o tabe-rare-ru** ‘w is affected (by x) eating y’ (cf. **x-ga y-o**  
**taberu** ‘x eats y’)

Since the *ni*-marked noun phrase fills an argument role in the corresponding non-passive predicate *taberu* ‘eat’, it appears from this example that the indirect passive has the effect of both adding one and subtracting one argument, for a net valency effect of zero.

$$(97) \quad n(V\text{rare}_{\text{ind}}) = n(V) + 1 - 1 = n(V)$$

Insofar as these numbers are concerned, the net effect on valency effected by the indirect passive (*r*)are is the same as that of the causative-passive (*s*)aserare. There is a major difference, though, in how that effect is achieved: with the causative-passive, the final product is the result of adding and then subtracting the same argument (see (92)), whereas with the indirect passive, the effect on valency of adding one argument is canceled by the subtraction of another, distinct argument. The resulting argument structures are therefore distinct in the two cases, despite the similarity in valency.

The valency pattern in (97) appears to hold with sufficient generality for indirect passives formed on predicates of valency two or higher that take accusative arguments. As illustrated for two-place *x-ga y-o kau* ‘buy’ and three-place *x-ga y-o [z-ni] osieru* ‘tell’<sup>24</sup> in (98) and (99), *ni*-marked demoted subjects do not exhibit argument status in indirect passive structures formed on these predicates.

- (98) *Yasu-ku nat-tei-ta syoohin o zenbu saki-ni*  
 be.cheap-GER become-RES-PST articles ACC all in.advance  
*kaw-are-tesimat-ta rasii.*  
 buy-PASS-be.inconvenienced-PST EVID  
 ‘It seems that s/he had all the articles on sale bought ahead of him/her.’  
 → B: *Dare ni?* → A: *Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘By whom?’ ‘I don’t know.’  
**w-ga (x-ni) y-o kaw-are-ru** ‘w is affected (by x) buying y’ (Cf. **x-ga y-o kau** ‘x buys y’)
- (99) *Syatyoo wa kaisyaa no daizi-na himitu o gaibu*  
 president TOP company GEN important secrets ACC outside  
*no hito ni osie-rare-tesimat-ta rasii.*  
 GEN person DAT tell-PASS-be.inconvenienced-PST EVID  
 ‘It seems that the company president had important company secrets told to someone outside the company.’  
 → B: *Dare ni?* → A: *Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘By whom?’ ‘I don’t know.’  
**w-ga (x-ni) y-o [z-ni] osie-rare-ru** ‘w is affected (by x) telling y to z’ (Cf. **x-ga y-o [z-ni] osieru** ‘x tells y to z’)

The situation is different, however, for indirect passives built on intransitive predicates, including one-place predicates and two-place predicates where the second argument is non-accusative. This is illustrated in (100) and (101) with one-place *x-ga oyogu* ‘x swims’ and two-place *x-ga y-ni kuru* ‘x comes to (place) y.’

<sup>24</sup> Recall from Section 4 that the *z-ni* constituent here is, as indicated by the square brackets, a “quasi-argument” lacking the robust status of a full-fledged argument.

- (100) *Puuru no kanrinin wa karada o araw-anai-de puuru de*  
 pool GEN manager TOP body ACC wash-NEG-GER pool LOC  
*oyog-are-te (kankan ni nat-ta) rasii.*  
 swim-PASS-GER rage DAT become-PST EVID  
 ‘It seems that the pool manager had ( ) swim in the pool without washing  
 (and flew into a rage.)’  
 → B: *Dare ni?* → A: *#Sir-ana-i.*  
           who DAT                                    know-NEG-NPST  
           ‘(Had) who (swim)?’                    ‘I don’t know.’  
**w-ga x-ni oyog-are-ru** ‘w is affected by x swimming’ (Cf. **x-ga oyogu** ‘x swims’)
- (101) *Emiko wa yotei yori hayaku yuusiyokukai ni*  
 Emiko TOP plan than early dinner GOAL  
*ko-rare-tesimat-ta rasii.*  
 come-PASS-be.inconvenienced-PST EVID  
 ‘It seems that Emiko was inconvenienced by ( ) coming to dinner before the  
 expected time.’  
 → B: *Dare ni?* → A: *#Sir-ana-i.*  
           who DAT?                                    know-NEG-NPST  
           ‘By who (coming)?’                    ‘I don’t know.’  
**w-ga x-ni y-ni ko-rare-ru** ‘w is affected by x coming to (place) y’ (Cf. **x-ga y-ni**  
**kuru** ‘x comes to (place) y’)

For indirect passives such as (100) and (101), the increase in valency effected by the addition of a subject not present in the original argument structure is not counterbalanced by the loss of the demoted subject in *ni* from argument structure, so that a net increase in valency results.

$$(102) \quad n(\text{Vrare}_{\text{ind}}) = n(V) + 1$$

While both passive types, direct and indirect, thus have the effect of demoting the subject argument of the attached predicate, application of the *siranai* test shows their effects on valency and argument structure to be strikingly different, the direct passive effecting a net loss in valency and the indirect passive having either a neutral effect or net positive effect on valency, due to the extra argument introduced as the indirect passive subject and the possibility of the demoted subject argument continuing to function as a *ni*-marked argument in the indirect passive construction. The fact that the *ni*-marked demoted subject functions as an argument only in cases when the original predicate has a low valency of one or, in limited cases two, but not for predicates of higher valency, is evidence of the constraint we observed in Section 4, likely cognitively-based, that restricts the valency of predicates to two places or at most three, but no more.

Another class of auxiliary constructions where effects on valency and argument structure can be seen, at least in part, are those formed from donatory verbs (verbs of giving and receiving) attached to the gerund *TE* form of verbs. Three major classes of donatory verbs can be distinguished in Japanese, according to whether the nominative subject is a giver (verbs of giving) or a recipient (verbs of receiving) and, among verbs of giving, whether the giving is directed toward the speaker or someone the speaker identifies with (*kureru* type) or away from the speaker or someone the speaker identifies with (*ageru* type) (Kuno and Kaburaki 1977). A representative verb from each of the three donatory classes is given in (103), together with the argument structure the verb takes when used as an independent (non-auxiliary) predicate.

(103) a. Verbs of giving

- i. Giving directed toward speaker or speaker's in-group (speaker identifies with *ni*-marked entity)

*Haha ga (watasi ni) kono tokei o kure-ta.*  
 motherNOM me DAT this watch ACC give.to.me-PST  
 'My mother gave me this watch.'

**x-ga z-ni y-o kureru** 'x gives y to z (=speaker or in-group)'

- ii. Giving directed away from speaker or speaker's in-group (speaker identifies with *ga*-marked entity)

*Hanako ga Barentain Dee ni Taroo ni tyokoreeto*  
 Hanako NOM Valentine's Day TMP Taro DAT chocolate  
*o age-ta.*  
 ACC give-PST

'Hanako gave Taro chocolates on Valentine's Day.'

**x-ga (z-ni) y-o ageru** 'x (=speaker or in-group) gives y to z'

- b. Verbs of receiving

*Taroo ga Barentain Dee ni Hanako ni/kara tyokoreeto*  
 Taro NOM Valentine's Day TMP Hanako DAT/ABL chocolate  
*o morat-ta.*  
 ACC receive-PST

'Taro received chocolates from Hanako on Valentine's Day.'

**x-ga (z-ni/kara) y-o morau** 'x receives y from z'

In Section 4 we saw that *ni*-marked noun phrases with *ageru* and *morau* exhibit relatively weak argument characteristics by the *siranai* test, as indicated by parentheses above. Still, it is clear that these verbs at least license the presence of an overt *ni*-marked noun phrase, whether as an argument or an adjunct. With *kureru*, by contrast, the evidence for argument status of the *ni*-marked noun phrase is much firmer, although this argument is ironically the one most likely to be omitted in surface argument structure as the recipient can normally be inferred from the meaning of the verb itself. Given a modal context such as with *rasii* 'seem,' however, where the recipient



may more easily be seen as someone other than the speaker (albeit in the speaker's in-group), the argument status of the *ni*-marked noun phrase becomes clear.

(104) A: *Hanako ga tyokoreeto o kure-ta rasii.*

Hanako NOM chocolate ACC give-PST EVID

'It seems that Hanako gave ( ) chocolate.'

→ B: *Dare ni?*

who DAT

'(Gave to) who?'

→ A: *#Sir-ana-i.*

know-NEG-NPST

'I don't know.'

When used as verb auxiliaries, donatory verbs denote the giving or receiving of an action – i.e., the doing or receiving of a favor – rather than of an object:  $V_1$ *TE-kureru* 'do  $V_1$  for the speaker (or someone in the speaker's in-group),'  $V_1$ *TE-ageru* 'speaker (or someone in the speaker's in-group) does  $V_1$  for someone else,' and  $V_1$ *TE-morau* 'receive the favor of someone doing  $V_1$  (have someone do  $V_1$ ).' In the case of  $V_1$ *TE-kureru* and  $V_1$ *TE-ageru*, the performer of the action  $V_1$  and the person giving the favor are identical, whereas with  $V_1$ *TE-morau* the performer of  $V_1$  and the person receiving the favor are distinct. This means that the argument structure of  $V_1$  has to be altered in  $V_1$ *TE-morau* to accommodate the introduction of a subject argument not present in the argument structure of  $V_1$ . This is done by demoting the original subject in the argument structure of  $V_1$  in the usual way to a *ni*-marked phrase, as illustrated in (105).

(105) *Kodomo ga sara o arat-ta.*

children NOM dishes ACC wash-PST

'The children washed the dishes.'

**x-ga y-o arau** 'x washes y'

→ *Hahaoya ga kodomo ni sara o aratte-morat-ta.*

mother NOM children DAT dishes ACC wash-receive-PST

'The mother had the children wash the dishes.'

→ **w-ga (x-ni) y-o aratte-morau** 'w has x wash y (w receives from x the action of washing y)'

This would appear to automatically entail an increase in valency over that of  $V_1$ , but only of course if the *ni*-marked noun phrase has argument status. *Ni*-marked noun phrases demoted from subject position with  $V_1$ *TE-morau*, in fact, do not exhibit strong argument behavior, at least when  $V_1$  is a transitive two-place predicate.

(106) a. *Sara o aratte-morat-ta rasii.*

dishes ACC wash-receive-PST EVID

'It seems that s/he had ( ) wash the dishes.'

→ B: *Dare ni?*

who DAT

'(Had) who (do it)?'

→ A: *Sir-ana-i.*

know-NEG-NPST

'I don't know.'

- b. *Koware-ta tokei o naosite-morat-ta rasii.*  
 break<sub>in</sub>-PST clock ACC fix-receive-PST EVID  
 ‘It seems that s/he had ( ) fix the broken clock.’  
 → B: *Dare ni?* → A: *Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘(Had) who (do it)?’ ‘I don’t know.’

But the situation is quite different when  $V_1$  is a one-place predicate to begin with (e. g., *okiru* ‘get up’), or a two-place predicate that is ‘intransitive’-like, either in having a second argument that does not receive *o*-marking (e. g., *uti ni kaeru* ‘return home’) or in having an *o*-marked second argument that is a body part of the original subject (e. g., *te o arau* ‘wash one’s hands’). In such cases, the original subject of  $V_1$  exhibits robust argument status even when demoted to *ni*-marking.

- (107) a. *Asahayaku okite-morat-ta rasii.*  
 early.in.morning get.up-receive-PST EVID  
 ‘It seems that s/he had ( ) get up early.’  
 → B: *Dare ni?* → A: *#Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘(Had) who (do it)?’ ‘I don’t know.’
- b. *Hayaku kaette-morat-ta rasii*  
 early return-receive-PST EVID  
 ‘It seems that s/he had ( ) return home early.’  
 → B: *Dare ni?* → A: *#Sir-ana-i.*  
           who DAT know-NEG-NPST  
           ‘(Had) who (do it)?’ ‘I don’t know.’
- c. *Te o aratte-morat-ta rasii.*  
 hands ACC wash-receive-PST EVID  
 ‘It seems that s/he had ( ) wash their hands.’  
 → B: *Dare ni?* → A: *#Sir-ana-i.*<sup>25</sup>  
           who DAT know-NEG-NPST  
           ‘(Had) who (do it)?’ ‘I don’t know.’

<sup>25</sup> A reviewer points out that the *siranai* response in (107c) is acceptable if the hands in question are those of the main subject of the *TE-morau* construction, as in a child having someone else wash his/her hands, as opposed to the hands of the agent of *arau* ‘wash’ itself. This points to a possible correlation between the argument status of the *ni*-marked noun phrase and the distinction made in Nakatani (2013) between two kinds of *TE-morau* constructions: direct benefactives, where the subject benefits directly from the event in  $V_1$  and indirect benefactives, where the subject does not benefit directly. The *ni*-marked noun phrase would not, that is, have argument status in cases of direct benefit such as in the case of the hands in (107c) being those of the main subject of the *TE-morau* construction. But

The pattern here reflects closely that of the indirect passive construction discussed earlier in this section, where the original subject of  $V_1$  likewise shows a tendency to maintain its argument status even when demoted to *ni*-marking just in those cases where it is either a one-place predicate or a two-place predicate with a non-*o*-marked second argument. Taken together, the behavior of both the indirect passive and  $V_1$ *TE-morau* corroborate the tendency we observed in Section 4 for predicates to target an “ideal” valency level of two, at least when one of the arguments is *o*-marked, so that increases in valency effected by the attachment of auxiliaries or other affixes is most commonly observed for predicates that start out with a valency lower than two.

In examples such as (106), the subject introduced by *morau* and the object of  $V_1$  (*arau* ‘wash,’ *naosu* ‘fix’) are distinct entities, but that turns out to be the exception, not the rule, with *TE-morau* constructions. It is in fact normal in *TE-morau* constructions formed from predicates of two places or higher for the subject introduced by *morau* to be identified with one of the non-subject arguments of  $V_1$ . The normal situation, in other words, is for the favor received by the subject to be seen as an action that directly involves the subject himself/herself as a participant, as illustrated in the examples in (108).

- (108) a. *Kaisya no dooryoo ni eki made okutte-morat-ta.*  
 company GEN colleague DAT station GOAL send-receive-PST  
 ‘I received the favor of my colleague at work driving (me) to the station/I had my colleague at work drive (me) to the station.’
- b. *(Tokubetu kyoka de) kisyaseki ni irete-morat-ta.*  
 special permission INST press.box GOAL put/let.in-receive-PST  
 ‘(With special permission) I received the favor of (someone) letting me into the press box.’
- c. *Sobo ni mukasi no uta o osiete-morat-ta.*  
 grandmother DAT old.time GEN song ACC teach-receive-PST  
 ‘I received the favor of my grandmother teaching (me) an old song/I had my grandmother teach (me) an old song.’

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it is not clear exactly how the distinction between direct and indirect should be characterized, and whether there would accordingly be a correlation between *TE-morau* constructions formed from single-argument predicates and “indirect” benefit. For example *Asahayaku kite-moratta rasii* ‘It seems s/he had ( ) come early in the morning’ appears open to construal either as a direct or indirect benefit to the main subject, but in either case would by the *siranai* test require a *ni*-marked argument. See however the discussion following example (109) below of the valency-reducing tendency of the *TE-morau* construction as an effect of the directness of the semantic benefit seen to accrue to the subject of this construction.

In (108a, b), the (covert) subject argument *watasi* ‘I’ of *morau* doubles as the *o*-marked object of *okuru* ‘send/drive to,’ and *ireru* ‘let/put into,’ and in (108c) it doubles as the *ni*-marked phrase licensed by *osieru* ‘teach.’ In the resulting auxiliary construction, however, this argument appears only once, not twice. The net effect is illustrated in (109) for the verb *okuru* ‘send/drive to.’

- (109)      **y-ga x-o w-ni/made okuru** ‘y drives/sends x to w’      [n = 3]  
              **x-ga (y-ni) z-o morau** ‘x receives z from y’      [n = 2]  
              → **x-ga (y-ni) [y-ga x-o w-ni/made okutte] z-o**      [n = 3 + 2 – 3 = 2]  
              **morau**  
              → **x-ga (y-ni) w-ni/made okutte-morau.** ‘x has y      [n = 2]  
              drive/send (x) to w’

The parenthesized (*y-ni*) in the last line of (109) represents the non-argument adjunct status of the *ni*-marked noun phrase here, so that the actual number of resulting arguments is two. This tendency, unexpected from a purely syntactic standpoint, for the  $V_1$  *TE-morau* construction to have a valency-reducing effect can be seen as an effect of the semantics of benefit seen to accrue to the subject of this construction. Specifically, the degree of benefit can be seen to be maximized when the event in  $V_1$  involves the subject in as direct a fashion as possible. That happens precisely when the subject is itself an entity participating in the argument structure of  $V_1$ , so that the default interpretation given to the  $V_1$  *TE-morau* construction is one where an *o*-marked or *ni*-marked human argument of  $V_1$  is identified with the subject of the auxiliary construction, except when otherwise specified. In the case of a three-place predicate such as *okuru* ‘send’ in (109) the effect of  $V_1$  *TE-morau* in its default use is therefore to reduce the number of arguments to two.

To recapitulate, while  $V_1$  *TE-morau* invariably acts to alter the argument structure of  $V_1$  by introducing a subject distinct from that of  $V_1$ , its effects on valency are wide-ranging, in some cases increasing, in some cases decreasing, and in some cases effecting no net change in the number of arguments of  $V_1$ . However, the increases tend to occur with predicates of lower valency, typically one, while the decreases tend to occur with predicates of higher valency, typically three, so the net resulting valency of the complex predicate as a whole tends to merge around two. Some representative examples of  $V_1$  *TE-morau* constructions are given in (110), with the brackets showing in each case the valency of the main predicate, as determined by the *siranai* test, followed by the number of arguments added or subtracted by the addition of *TE-morau*, and the net resulting valency of the construction as a whole. *Ni*-marked noun phrases that are adjuncts are indicated by parentheses.

- (110) a.      *Kodomo ni asahayaku okite-morat-ta.*      [1 + 1, net 2]  
              children DAT early.in.morning get.up-receive-PST  
              ‘I had the children get up early.’

- b. *Kodomo ni te o aratte-morat-ta.* [2 + 1, net 3]  
 children DAT hands ACC wash-<sub>in</sub>-receive-PST  
 'I had the children wash their hands.'
- c. *(Titi ni) koware-ta tokei o naosite-morat-ta.* [2 + 0, net 2]  
 father DAT break<sub>in</sub>-PST clock ACC fix-<sub>in</sub>-receive-PST  
 'I had (my father) fix the broken clock.'
- c. *(Zyoosi ni) sasotte-morat-te, (nomi ni it-ta).* [2 – 1, net 1]  
 boss DAT invite-<sub>in</sub>-receive-GER drink-INF PURP  
 go-PST  
 'I had (my boss) invite me (i. e., I was invited (by my boss)), (and I went out drinking).'
- d. *(Tomodati ni) eki made okutte-morat-ta.* [3 – 1, net 2]  
 friend DAT station GOAL send-<sub>in</sub>-receive-PST  
 'I had (my friend) drive (me) to the station.'

(110b) appears to be an exception to this pattern, but is unusual in that the two arguments of *kodomo-ga te-o arau* 'child washes (its) hands' express an individual and a body part of the individual, a reflexive relationship that ultimately involves only one individual. If these two are counted as one, this construction may be considered a notional variant of a one-place intransitive construction, so that the resulting valency of  $V_1$ TE-*morau* is again two.

This non-additive effect of TE-*morau* on the valency of verbs to which it is attached is seen in a particularly striking way when it is attached to the causative form of a verb in the V1*sasete-morau* pattern. Given the valency-increasing effect of causative *sase*, and the potentially valency-increasing effect of TE-*morau*, the net effect on the valency of V1 may here be thought to be as high as +2. In fact, the net effect is zero, and the argument structure of  $V_1$ *sasete-morau* ends up being the same as that of  $V_1$  in the default interpretation given to this construction. This is illustrated in (111) for the example *tabesasete-morau* 'receive the favor of (someone) allowing one to eat (i. e., be allowed to eat, get to eat).'

- (111) a. *Watasi ga (kodomo no koro mainiti) aisukuriimu o*  
 I NOM child GEN time daily ice.cream ACC  
*tabe-ta.* [n = 2]  
 eat-PST  
 'I ate ice cream every day when I was a child.'

- b. *Haha ga (kodomo no koro mainiti) watasi ni*  
 mother NOM child GEN time daily me DAT  
*aisukuriimu o tabe-sase-ta.* [n = 2 + 1 = 3]  
 ice.cream ACC eat-CAUS-PST  
 'My mother let me eat ice cream every day when I was a child.'
- c. *Watasi ga (haha ni) (kodomo no koro mainiti)*  
 I NOM mother DAT child GEN time daily  
*aisukuriimu o tabe-sasete-morat-ta.* [n = 3 - 1 = 2]  
 ice.cream ACC eat-CAUS-receive-PST.  
 'I received the favor of (my mother) allowing me to eat ice cream every day  
 when I was a child (I was allowed to eat ice cream every day when I was  
 a child).  
**x-ga y-o (z-ni) tabe-sasete-morau** 'x is allowed to eat y (by z), x gets to  
 eat y' (cf. **x-ga y-o taberu** 'x eats y.')

The canceling of the expected additive effect of combining both *sase* and TE-*morau* is due to two main factors: (a) the identification of the subject of *morau* (here *watasi* 'I') in (111c) with the *ni*-marked agent *watasi ni* of *sase* (the demoted subject of *taberu* 'eat' in (111a)) and (b) the loss of argument status of *haha* 'mother' when it is demoted from the subject of the *sase* construction in (111b) to *ni*-marked agent of the TE-*morau* construction in (111c). Note also how the causative *sase* in this case receives the permissive causative 'let, allow' interpretation rather than the more forceful active 'cause' interpretation, a result of the semantics of TE-*morau* imposing a benefactive interpretation on its preceding predicate. The resulting argument structure of  $V_1$  *sasete-morau* 'be allowed to, get to  $V_1$ ' as a whole is thus the same as  $V_1$ , an effect exactly parallel to the causative-passive  $V_1$  *saserareru* 'be made to  $V_1$ ,' which likewise shares the original argument structure of  $V_1$  (see (93)), but these two constructions of course differ greatly along semantic parameters other than argument structure alone.

The overwhelming tendency, then, is for the receive-type  $V_1$  TE-*morau* construction to 'merge' around a valency of two, although it does exhibit an effect on argument structure, in some cases adding a new subject argument and allowing the original subject of  $V_1$  to maintain its argument status even when denoted to agentive *ni* marking. The auxiliary patterns with give-type verbs,  $V_1$  TE-*ageru* 'speaker or in-group member does  $V_1$  for someone else' and  $V_1$  TE-*kureru* 'someone does  $V_1$  for the speaker or in-group,' by contrast, show no effect at all on argument structure. In these cases, since the individual performing the action of  $V_1$  and the person giving the favor are identical, there is no introduction of a new *ga*-marked argument that would give rise to any change in valency. A potential for increased valency does exist in the *ni*-marked entity that is licensed by both *kureru* and *ageru* (see (103) – the entity expressing the beneficiary in the use of these as independent verbs – but the *ni* marking here is only possible when it is licensed independently by  $V_1$ , and cannot occur otherwise.

- (112) a. *Kodomo ni nihongo no uta o osiete-age-ta.*  
 children DAT Japanese GEN song ACC teach-give-PST  
 ‘I taught a Japanese song to the children.’
- b. *Musuko ni sumaho o katte-age-ta.*  
 son DAT smart.phone ACC buy-give-PST  
 ‘I bought a smartphone (cell phone) for my son.’
- c. *Otooto (\*ni/no) zitsensya o naosite-age-ta.*  
 little.brother DAT/GEN bicycle ACC fix-give-PST  
 ‘I fixed the bicycle for my brother/fixed my brother’s bicycle.’
- (113) a. *Tomodati ga (watasi ni) nihongo no uta o*  
 friend NOM me DAT Japanese GEN song ACC  
*osiete-kure-ta.*  
 teach-give.me-PST  
 ‘A friend taught me a Japanese song.’
- b. *Kodomozuki no tonari no ozisan wa yoku uti*  
 child-liking GEN next.door GEN man TOP often our  
*no kodomo ni okasi o katte-kure-ru.*  
 GEN children DAT candy ACC buy-give.me-PST  
 ‘Our doting neighbor often buys candy for our children.’
- c. *Otooto ga watasi (\*ni/no) zitsensya o*  
 little.brother NOM me DAT/GEN bicycle ACC  
*naosite-kure-ta.*  
 fix-give.me-PST  
 ‘My brother fixed the bicycle for me/fixed my bicycle.’

Verbs such as *osieru* ‘teach/tell’ and *kau* ‘buy,’ clearly license *ni*-marked entities, as in *Kodomo ni uta o osieta* ‘I taught a song to the children’ and *Musuko ni sumaho o katta* ‘I bought a cellphone for my son,’ while *naosu* ‘fix’ does not, as seen in the unacceptability of *\*Otooto ni zitsensya o naosita* ‘I fixed the bicycle for my brother.’ As (112c) and (113c) show, the beneficiary in give-type constructions with verbs like *naosu* must be incorporated into the existing argument structure by some indirect means, such as attaching it as a noun phrase modifier of an existing argument of  $V_1$  (e. g., *zitsensya* ‘bicycle’ in these examples). With verbs that do not independently license a *ni*-marked entity, therefore,  $V_1$ TE-*ageru* and  $V_1$ TE-*kureru* simply inherit wholesale the argument structure of  $V_1$ , as shown in (114) for *naosu* ‘fix.’





fering effects on argument structure, again demonstrable through application of the *siranai* test, showing the indirect passive to involve either no net increase in valency or a valency increase of one, depending on the valency of the original predicate, but in all cases incorporating an element into the subject position that is not present in the argument structure of the original predicate, unlike the direct passive. Changes in valency and argument structure are also possible with donatory constructions, particularly the receiving-type  $V_1$ TE-*morau* construction, which adds a subject argument seen to benefit from the event expressed by  $V_1$ . That sense of benefit is maximized, however, just in those cases where that argument is directly identified with one of the non-subject arguments of  $V_1$ , resulting in a default pressure to eliminate that argument and cancel any effect on valency that would otherwise result from the introduction of the subject argument.

Overall, any introduction of additional arguments that might be brought about by valency-increasing affixes, especially multiple such affixes, is counterbalanced by a general ‘conspiracy’ to keep the net valency of the resulting complex predicate within the same bounds that we observed for simple lexical predicates – i. e., within a range of between one and three obligatory arguments, with two forming the ‘ideal’ target. This conspiracy manifests itself most dramatically in the case of the causative-passive  $V1(s)$ aserareru and the causative-donatory  $V_1(s)$ aseTE-*morau* constructions. Each of these involves combining the valency-increasing affix  $V_1(s)$ ase with another affix that has potential valency-increasing uses, as for example the indirect passive use of  $V_1(r)$ are. Yet the actual interpretation imposed in each case is such that the second affix in fact cancels the valency-increasing effects of (s)ase – in the case of  $V_1(s)$ aserareru by requiring a valency-reducing direct passive interpretation on (r)are, and in the case of  $V_1(s)$ aseTE-*morau* by simultaneously demoting the subject argument introduced by  $V_1(s)$ ase to non-argument status and by identifying the subject argument of the construction with an already-existing argument of  $V_1$ , thereby eliminating it from the valency count. In their default uses,  $V_1(s)$ aserareru and  $V_1(s)$ aseTE-*morau* therefore bring about no net increase or decrease in number of arguments, maintaining the same valency as  $V_1$  itself. The general picture that emerges is one where morphological affixes participate in the creation of complex predicates that take their place along lexical predicates as unitary predicates of a single clause, subject to the same constraints on argument structure as lexical predicates.

## 8 Conclusion

Adjuncts and arguments in Japanese are represented by the full constellation of noun phrase + case particle forms that may potentially co-occur in the same clause as a predicate, each case particle specifying the particular relationship of meaning the noun phrase has to the predicate. In some cases, the meaning specified by a case particle is

inherent to the particle itself, staying constant no matter what the predicate is, such as is the case with *kara* ‘from’ and *made* ‘until.’ Other case particles have meanings that are more abstract, deriving their specific meaning in interaction with the predicate they co-occur with, as seen in the various meanings taken on by the particles *ga*, *o*, and *ni* with different predicate types. Though there is no strict correlation between the kind of case marker and the status of the noun phrase it marks as argument or adjunct, case markers of the first type are more frequently seen on adjuncts, and those of the latter type are more frequently seen on arguments.

Argument structure – the pattern of noun phrases and case markings expressing roles that a speaker must consciously understand to be present in the event expressed by a predicate – is not always overt in Japanese, either in the form of full noun phrases or in the form of pronouns or clitics seen in many other languages. Yet it is a robust presence that plays a crucial role behind the scenes in allowing hearers and speakers to correctly track participants through extended discourse, and native processes of comprehension and production cannot be accounted for without it. In this chapter we have proposed a tool – the *siranai* test – as a way of making overt its invisible presence and role in undergirding such processes. An application of this test across a wide range of predicates in Japanese confirms the central role played by the case particles *ga*, *o*, and *ni* in marking arguments but reveals a surprisingly limited number of predicates that are truly three-place, pointing to a possible cognitive constraint on the number of arguments associated with a predicate limiting them to no more than three and ideally one or two. It also confirms that, while argument roles are overwhelmingly played by noun phrases, there exist a limited number of predicates where argument roles are played by adverbs.

Application of the *siranai* test shows in addition that every predicate in Japanese has at least one argument slot (there are no zero-place predicates in Japanese), that there is at least one slot in the argument structure of every predicate that receives nominative *ga* marking, and that all *ga*-marked noun phrases have the status of arguments. The *ga*-marked nominative present in argument structure may not be visible in surface contexts where the noun phrase itself is not visible or its case marking may be preempted by focus particles such as *wa* or *mo*, but its presence is firmly demonstrated by the *siranai* test. From this emerges naturally an argument-structure-based conception of subject in Japanese that takes nominative *ga* marking to be the default property of subjects in general in Japanese, with two qualifications. One is the existence of a limited group of predicates where noun phrases marked by locative *de*, ablative *kara*, or dative *ni* mark animate entities that exhibit subject-like syntactic characteristics such as acting as the antecedent for honorification or reflexivization. Such cases nevertheless invariably allow alternative case marking with nominative *ga*. The second is the presence of double-nominative *x-ga y-ga* argument structures (some of which alternate with *x-ni y-ga* marking), in which case one of the two *ga*-marked noun phrases exhibits syntactic properties that set it apart from the other *ga*-marked noun phrase as subject, meaning that not every *ga*-marked argument will

qualify as subject. From these two qualifications together, it follows that the *possibility* of nominative marking is a necessary, though not a sufficient, condition for a noun phrase argument to be identified as subject in Japanese. In all cases, a single subject argument can be identified with every predicate, so that a one-to-one correspondence between predicate and subject is preserved in all cases.

A large number of apparent multiple nominative constructions in Japanese are in fact multiple-clause structures where all *ga*-marked arguments except the final one take as their predicate a clause with its own internal structure of form *[z-ga Pred]*. The ability of such clauses to take their own argument structure is licensed by the clause corresponding in its meaning to a copular *[z-ga Pred]y-da* structure, where *[z-ga Pred]* is embedded as a relative clause modifier of a nominal entity *y* representing either an individual entity or a state or condition of an entity. The predicate in the former case expresses a property possessed by that individual setting it apart from other individuals and, in the latter case, a property possessed by that individual at a certain point or interval in time setting it apart from other points or intervals in time.

The final section of this chapter explored the potential of the *siranai* test to clarify the effects on argument structure of various morphological affixes in Japanese. Despite the presence of a wealth of such affixes in Japanese, we observed that, whether attached to predicates either singly or in combination, various factors conspire to produce argument structures that are subject to the same constraints as those seen with simple predicates, namely structures within a range of between one and three obligatory arguments, with two forming the ‘ideal’ target.

The range of argument structure patterns surveyed in this chapter through the lens of the *siranai* test have been no more than a representative sampling of such patterns. It must be left to future research to extend the application of this test to consider the effects on valency and argument structure of other auxiliary patterns not considered in this chapter, such as the resultative intransitive construction  $V_1TEaru$  ‘has been  $V_1$ ed,’ the desiderative construction  $V_1tai$  ‘want to  $V_1$ ’ and  $V_1TEhosii$  ‘want (someone) to  $V_1$ ,’ and especially to clarifying the complex interactions in argument structure between  $V_1$  and  $V_2$  in the rich repertory of compound verb constructions  $V_1V_2$  based on the infinitive (*ren’yookei*) form of  $V_1$ . All of these have been the target of intensive research in Japanese linguistics,<sup>26</sup> but without the benefit of a tool that can be applied objectively to discriminate between arguments and adjuncts, and thereby to clarify definitively how these patterns function to alter argument structure. While broadening the scope of application of the *siranai* test in this way, further research is at the same time necessary to bring to light possible limitations in this test, reliant as it is on the existence of appropriate question words to target potential arguments, to

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<sup>26</sup> Regarding the  $V_1TEaru$  and  $V_1TEhosii$  constructions, for example, see Mitsui (2007) and Nakatani (2013) and for compound constructions, see Kageyama (1993, 1999, *inter alia*).

determine if the test is too limiting, or too liberal, in the class of noun phrases (and adverbs) it admits to the status of argument. Whether this test is ultimately successful in providing an empirical foundation for argument structure, it is hoped that it may at least function as a step toward firming up that empirical foundation in understanding the critical interface between form and meaning that argument structure represents.

## Additional abbreviations

GOAL – goal, in – intransitive, NPST – nonpast, POT – potential, TENT – tentative, TMP – temporal, tr – transitive

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Takao Gunji

## 4 Formal logical approaches to meaning in Japanese

### 1 Fundamental concepts

#### 1.1 Syntax, semantics, and pragmatics

The distinction among the three major fields of linguistics: *syntax* (the study of the system of signs), *semantics* (the study of the relationship between signs and what they refer to), and *pragmatics* (the study of the signs, their referents, and people who use them) is sometimes fuzzy and it may be hard to classify a given linguistic phenomenon into one specific field.

Rather than proposing a definitive criterion for the above distinction, I will illustrate in this chapter the kinds of semantic analysis that have been proposed for certain linguistic phenomena in Japanese that have been commonly considered to be “semantic” in nature in order to give the reader an idea of how such semantic analysis is done.

Formal semantics is concerned with how linguistic forms are interpreted, not how linguistic forms are structured. Thus, the structure of LF (logical form) of the kind proposed in currently popular frameworks of syntactic theory, for example, is not our concern insofar as it does not affect interpretation. In the following, I will be concerned for the most part with formal devices such as logical formulae (as in predicate logic) and devote little attention to how they are related to syntactic representations such as LF.

This chapter consists of two parts. In the first part, Sections 1.2–1.5 introduce fundamental concepts and their importance in semantic analysis. Sections 1.6–1.9 will take up some typical phenomena that have been considered to be better suited for a semantic rather than syntactic analysis. Section 1.10 will treat some select pragmatic aspects of Japanese sentences. In the second part (Sections 2.1–2.6) certain linguistic phenomena that appear to be specific to Japanese will be given formal-semantic analyses. I will deal there with six phenomena in particular: two kinds of passive, floating quantifiers, the negative polarity item (NPI) *sika*, two types of subject marker, the copula *da*, and the semantics of questions.

#### 1.2 Denotation and truth conditions

Semantics is concerned with “meaning.” But what is “meaning”? This is a question that has no simple answer and many approaches have been proposed in defining



what “meaning” means. Instead of detailing the variety of such possible approaches, I will in this chapter adopt one approach and show how it is applied in the overall study of semantics.

Let us use the technical term *denotation* for what a linguistic expression refers to. For a simple proper name like *Naomi*, the denotation of *Naomi* is the specific person with that name, the referent.<sup>1</sup> For certain classes of proper names such as those used for Kabuki actors, the denotation varies depending on the time when the word is used. For example, the name of the Kabuki actor *Nakamura Kanzaburo* when used in 2019 refers to the deceased (as of 2012) 18th actor in the family lineage, whereas from 1950 until March 2005, when the 18th succeeded his father, the 17th, this name referred to his father.

Although this may sound like a very special case, such change of denotation frequently occurs for common nouns such as *syatyoo* ‘CEO,’ *syusyoo* ‘prime minister,’ *tuma* ‘wife,’ *otto* ‘husband,’ etc.

To take a famous example, in Japanese, as in English, there are two ways of referring to the planet Venus. One is *yoi no myoozyoo* ‘evening star (lit. bright star in the evening)’ and the other is *ake no myoozyoo* ‘morning star (lit. bright star at dawn)’. Both *yoi no myoozyoo* and *ake no myoozyoo* therefore refer to the same planet and hence their denotations are the same. Does this mean that both have the same meaning?

Some may not feel it is quite right to say these have the same “meaning.” Intuitively, *yoi no myoozyoo* and *ake no myoozyoo* “mean” different objects, even though they may in fact be the same planet, astronomically speaking.

It is common in this connection to make a distinction between *denotations* and how they are obtained.<sup>2</sup> We often use the term “meaning” in the second sense. Thus, *yoi no myoozyoo* must be used to refer to the bright star seen in the sky early on in the evening, while *ake no myoozyoo* can only be used to refer to the bright star appearing in the sky at dawn.

The two sentences in (1) therefore express different state of affairs. (1a) can be true in referring to Naomi seeing Venus in the evening, while (1b) would be false in that situation.

- (1) a. *Naomi wa yoi no myoozyoo o mi-ta.*  
       Naomi TOP evening GEN star ACC see-PST  
       ‘Naomi saw the evening star.’

<sup>1</sup> If there are several persons with the same name, usually the context determines who the referent of that name is.

<sup>2</sup> Historically, the importance of this distinction was first argued for by Frege (1892), who made this distinction using the German words *Bedeutung* ‘reference’ and *Sinn* ‘sense.’ The former corresponds to denotation and the latter to how a denotation is obtained.

- b. *Naomi wa ake no myoozyoo o mi-ta.*  
 Naomi TOP morning GEN star ACC see-PST  
 ‘Naomi saw the morning star.’

The difference in “meaning” between (1a) and (1b) can be attributed to a difference in the *truth conditions* of these sentences. In general, a *truth condition* is a function that gives the *truth value* for a sentential expression depending on the utterance situation. Thus, the truth condition for (1a) gives the value *true* if Naomi saw Venus in the evening and *false* if she saw Venus in the morning. Similarly, (1b) becomes true if and only if (iff) Naomi saw Venus at dawn.

In this sense, the truth value of a sentence (utterance, to be precise) is its denotation, while the truth condition of a sentence is a matter of how its truth value is obtained.

### 1.3 Propositional logic and predicate logic

#### 1.3.1 Meta-language and object language

In order to talk about meaning in a natural language, we need some kind of language to do so. Very often some form of natural language is used for that purpose, but if this is no more than a paraphrase of the natural language expression in question, we are no closer to an objective description of its meaning.

Thus, the kind of language used in semantic description is commonly a formal language, or at least a formalized version of natural language. Such a language is commonly referred to as a meta-language, i. e., a language to talk about a language, in order to distinguish between the language used in semantic analysis from the *object language* it describes.

#### 1.3.2 Propositional logic

There is a long tradition to using a logical system of some kind as the meta-language for semantic description. *Propositional logic* (or *propositional calculus*) is one such system that can be used to express the meaning of sentences. Usually, a symbol in propositional logic corresponds to a *proposition*, giving the denotation of a sentence. It is often the case that a sentence consists of two or more sub-sentences joined by some kind of connective that expresses the relation between them. For example, the following sentences consist of the same sub-sentences but these are combined with different connectives.

- (2) a. *Naomi ga Kinsei o mi-ta si Ken ga Kasei o*  
 Naomi NOM Venus ACC see-PST and Ken NOM Mars ACC  
*mi-ta.*  
 see-PST  
 ‘Naomi saw Venus and Ken saw Mars.’
- b. *Naomi ga Kinsei o mi-ta ka Ken ga Kasei o*  
 Naomi NOM Venus ACC see-PST or Ken NOM Mars ACC  
*mi-ta.*  
 see-PST  
 ‘Naomi saw Venus or Ken saw Mars.’

If we use  $p$  to represent the first sub-sentence *Naomi ga kinsei o mita* ‘Naomi saw Venus’ and  $q$  for the second sub-sentence *Ken ga Kasei o mita* ‘Ken saw Mars,’ the above two sentences can be expressed using the following formulae in propositional logic:

- (3) a.  $p \wedge q$   
*Naomi ga Kinsei o mi-ta si Ken ga Kasei o*  
 Naomi NOM Venus ACC see-PST and Ken NOM Mars ACC  
*mi-ta.*  
 see-PST  
 ‘Naomi saw Venus and Ken saw Mars.’
- b.  $p \vee q$   
*Naomi ga Kinsei o mi-ta ka Ken ga Kasei o*  
 Naomi NOM Venus ACC see-PST or Ken NOM Mars ACC  
*mi-ta.*  
 see-PST  
 ‘Naomi saw Venus or Ken saw Mars.’

Here  $\wedge$  corresponds to *si* ‘and’ and expresses a *conjunction* of two propositions. On the other hand,  $\vee$  corresponds to *ka* ‘or’ and expresses a *disjunction*.

Other symbols often used in propositional logic include the *negation* operator,  $\neg$ , and the *conditional* connective,  $\rightarrow$ . Formulae containing these symbols can be used as in the following examples:

- (4) a.  $\neg p$   
*Naomi ga Kinsei o mi-ta no-dewa-na-i.*  
 Naomi NOM Venus ACC see-PST COMP-COP-NEG-NPST  
 ‘It is not the case that Naomi saw Venus.’

b.  $p \rightarrow q$

*Naomi ga Kinsei o mi-ta no-naraba Ken ga Kasei*  
 Naomi NOM Venus ACC see-PST COMP-COND Ken NOM Mars  
*o mi-ta.*

ACC see-PST

‘If Naomi saw Venus, then Ken saw Mars.’

These connectives and operators can be multiply stacked, resulting in complex formulae such as shown below, although the natural language counterparts to such formulae may not be commonly attested.

(5)  $\neg p \vee (p \wedge \neg q)$

*Naomi ga Kinsei o mi-ta no-dewa-nai ka, Naomi*  
 Naomi NOM Venus ACC see-PST COMP-COP-NEG or Naomi  
*ga Kinsei o mi-ta si Ken ga Kasei o mi-ta*  
 NOM Venus ACC see-PST and Ken NOM Mars ACC see-PST  
*no-dewa-na-i.*

COMP-COP-NEG-NPST

‘Either it is not the case that Naomi saw Venus, or Naomi saw Venus and it is not the case that Ken saw Mars.’

### 1.3.3 Predicate logic and quantification

Sentences in natural language usually consist of several constituents, such as the subject, objects, the verb, and so on. Formulae in propositional logic express whole sentences as units and don’t allow us access to the internal structure of sentences. Thus, the following two sentences are treated as completely different propositions, with no relationship between them expressible in propositional logic.

(6) a. *Naomi ga Kinsei o mi-ta.*  
 Naomi NOM Venus ACC see-PST  
 ‘Naomi saw Venus.’

b. *Naomi ga wakusei o mi-ta.*  
 Naomi NOM planet ACC see-PST  
 ‘Naomi saw a planet.’

This is a defect of propositional logic, since we can infer (6b) from (6a), given the knowledge that Venus is a planet.

The situation becomes somewhat better if we use *predicate logic*, where each formula is composed of a predicate and its arguments. For example, (6a) would be expressed in the following way.

- (7)  $S_e(n, v)$   
*Naomi ga Kinsei o mi-ta.*  
 Naomi NOM Venus ACC see-PST  
 ‘Naomi saw Venus.’

In (7),  $S_e$  expresses a two-place predicate corresponding to *mi* ‘see’, while  $n$  and  $v$  are its arguments with the first argument,  $n$ , corresponding to the subject *Naomi* and the second argument,  $v$ , corresponding to the object *Kinsei* ‘Venus.’<sup>3</sup>

Thus, (7) is minimally different from either (8a) or (8b), both in natural language expression and in representation as logical formulae:

- (8) a.  $S_e(n, m)$   
*Naomi ga Kasei o mi-ta.*  
 Naomi NOM Mars ACC see-PST  
 ‘Naomi saw Mars.’  
 b.  $S_e(k, v)$   
*Ken ga Kinsei o mi-ta.*  
 Ken NOM Venus ACC see-PST  
 ‘Ken saw Venus.’

Another advantage of using predicate logic is that it allows us to express propositions involving common nouns with the use of *quantification*. As for sentences like (6b), a somewhat complicated formula in predicate logic is usually used.

- (9)  $\exists x [P_i(x) \wedge S_e(n, x)]$   
*Naomi ga wakusei o mi-ta.*  
 Naomi NOM planet ACC see-PST  
 ‘Naomi saw a planet.’

where  $P_i$  is a predicate corresponding to *wakusei-da* ‘be a planet’ and  $\exists x$  is an *existential quantifier*, which expresses existence of the referent of the following *variable*  $x$ . The above formula expresses that there exists an  $x$  such that the referent of  $x$  is a planet and the referent of  $n$  (i. e., Naomi) saw the referent of  $x$ .

<sup>3</sup> The word *mi-ta* ‘saw’ is the past form of *mi-ru* ‘see’. I will ignore tense in the logical formulae in this chapter.

This makes it possible now to prove that, given the truth of formula (7) and the fact that  $P_i(v)$  is true (i. e., Venus is a planet), (9) is true.

Another variety of quantification is *universal quantification*. The following shows an example of this with its counterpart sentence in Japanese:

- (10)  $\forall x [P_i(x) \rightarrow M_o(x, s)]$   
*Wakusei wa taiyoo no mawari o mawat-tei-ru.*  
 planet TOP sun GEN area.around ACC move-PROG-NPST  
 ‘Planets move around the sun.’

where  $M_o$  is a two-place predicate corresponding to *mawat-tei-ru* ‘move around’, and  $s$  refers to the sun.  $\forall x$  is a *universal quantifier*, which expresses that the formula that follows the quantifier holds for all referents of the variable  $x$ . The above formula thus expresses that for every referent of  $x$ , if it is a planet, then it moves around the sun.

Note that both in (9) and (10), the quantifier itself is implicit in the Japanese expressions. Existential quantification is suggested by the accusative case marker  $o$  in (9), while universal quantification is suggested by the topic marker *wa* in (10).

If we change the markers involved, the resulting interpretation will generally become quite different:<sup>4</sup>

- (11) a.  $\exists x [\forall y [P_i(y) \leftrightarrow y = x] \wedge S_e(n, x)]$   
*Wakusei wa Naomi ga mi-ta.*  
 planet TOP Naomi NOM see-PST  
 ‘As for the planet, Naomi saw it.’  
 b.  $\exists x [P_i(x) \wedge M_o(x, s)]$   
*Wakusei ga taiyoo no mawari o mawat-tei-ru.*  
 planet NOM sun GEN area.around ACC move-PROG-NPST  
 ‘A planet moves around the sun.’

In (11a), the first part expresses the uniqueness of the planet: there exists only one  $x$  that satisfies  $P_i(x)$ , and the second part says that such a unique planet is the one Naomi saw.<sup>5</sup> On the other hand, (11b) merely says that some planet moves around the sun.

<sup>4</sup> The word order for (11a) has been changed, since otherwise attaching the topic marker *wa* to a constituent that does not occur in sentence initial position usually invokes a contrastive interpretation, meaning here something like ‘Naomi saw a planet but nothing else.’

<sup>5</sup> As in (10), universal quantification would also be possible as an interpretation of (11a):

(i)  $\forall x [P(x) \rightarrow S(n, x)]$

However, while (10) is a generic sentence, (11a) is not. Thus, a universal interpretation seems less natural.

It is sometimes ambiguous what *scope* quantifiers take with respect to the negation operator. For example, the following sentence can have two interpretations.

- (12) *Naomi ga wakusei o mi-na-katta.*  
 Naomi NOM planet ACC see-NEG-PST

- a.  $\neg \exists x [P(x) \wedge S(n, x)]$   
 ‘Naomi didn’t see a planet.’  
 b.  $\exists x [\forall y [P(y) \leftrightarrow y = x] \wedge \neg S(n, x)]$   
 ‘Naomi didn’t see the planet.’

In (12a), negation takes *wide scope* over the existential quantifier. Hence (12a) has the interpretation that it is not the case that Naomi saw a planet. On the other hand, in (12b), the existential quantifier takes wide scope over negation. Hence (12b) has the interpretation that, as for the planet in question, it is not the case that Naomi saw it.

## 1.4 The compositionality principle

As we saw above, the meaning of a sentence changes depending on its syntactic constituents. In fact, it is commonly assumed that the meaning of a linguistic expression is a function of the meanings of its components. This is called the *Principle of Compositionality*, or *Frege’s Principle* after the first proponent of such a principle.

### (13) The Principle of Compositionality

The meaning of a linguistic expression is a function of those of its syntactic constituents.

Thus, the syntactic structure of a sentence is very important in determining its semantics. For example, even if exactly the same words are used, sequences of those words can have different meanings depending on their syntactic constituency. For example, sequences of words consisting of *Naomi ga*, *wakusei (o)*, and *mita* can have at least two different structures.

- (14) a. *Naomi ga wakusei o mi-ta.*  
 Naomi NOM planet ACC see-PST  
 ‘Naomi saw a planet.’  
 b. *Naomi ga mi-ta wakusei (o Ken mo mi-ta.)*  
 Naomi NOM see-PST planet (ACC Ken also see-PST)  
 ‘(Ken, too, saw the) planet that Naomi saw.’

(14a) is a sentence with order subject-object-verb, whereas (14b) (ignoring the part in the parentheses) is a noun phrase and the sequence *Naomi ga mita* is a relative clause modifying the noun *wakusei*. Thus, the former denotes a proposition, while the latter a celestial body.

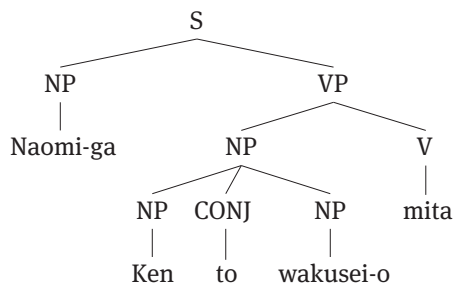
There are also cases where exactly the same sequence of words can have multiple meanings – a case of *ambiguity* or *polysemy*.

- (15) a. *Naomi ga Ken to wakusei o mi-ta.*  
 Naomi NOM Ken and planet ACC see-PST  
 ‘Naomi saw Ken and a planet.’
- b. *Naomi ga Ken to wakusei o mi-ta.*  
 Naomi NOM Ken COM planet ACC see-PST  
 ‘Naomi saw a planet with Ken.’

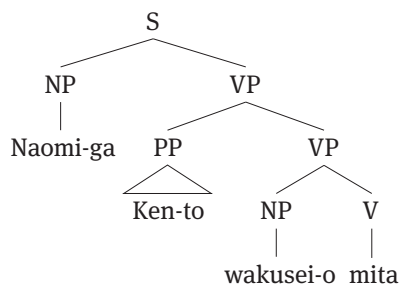
In (15a), *to* is a conjunctive and *Ken to wakusei* forms a noun phrase and serves as the object of the sentence. On the other hand, in (15b), *to* is a postposition forming a postpositional phrase whose function is to modify the verb. In this case, *Ken to* specifies the way Naomi saw a planet (‘with Ken’).

Here, we have roughly the following different constituent structures for the above interpretations.

- (16) a.



- b.





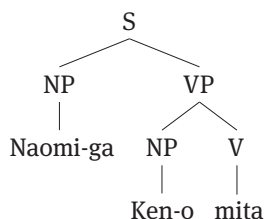
According to the compositionality principle, in (16a), the constituent corresponding to the sequence *Ken to wakusei o* is interpreted first and then it is combined with the denotation of *mita*, while in (16b), the constituent corresponding to the sequence *wakusei o mita* is interpreted first and then it is combined with the denotation of *Ken to*.

## 1.5 Types

Let us consider now the relationship between a constituent structure and the logical formula corresponding to it, based on the following simple sentence:

- (17) a.  $S_e(n, k)$   
*Naomi ga Ken o mi-ta.*  
 Naomi NOM Ken ACC see-PST  
 'Naomi saw Ken.'

b.



There is some discrepancy here between the constituent structure and its corresponding formula in predicate logic: there is nothing in the logical formula to represent the node corresponding to the verb phrase, as the logical formula takes two arguments (corresponding to the subject and the object respectively) at the same time.

A better, and often used, notation is the following, where the two-place predicate  $S_e$  takes the two arguments one at a time; it first takes the argument  $k$  corresponding to the object, forming  $S_e(k)$ , which corresponds to the verb phrase, and  $S_e(k)$  in turn takes the argument  $n$  corresponding to the subject.

- $$(18) \quad S_e(k)(n)$$

To make clearer the correspondence between syntactic constituent structure and the corresponding semantic object, it is useful to introduce the concept of *type*. The set of types is defined by the following recursive definitions.

- (19) a.  $e$  and  $t$  are types.  
b. If  $\alpha$  and  $\beta$  are types, so is  $\langle \alpha, \beta \rangle$ .

The type  $e$  corresponds to individual entities and  $t$  to truth-denoting propositions.  $\langle \alpha, \beta \rangle$  is the type of a function taking an argument of type  $\alpha$  and giving type  $\beta$  as the result. Thus, for example, an intransitive verb will correspond to type  $\langle e, t \rangle$ , where  $e$  is the type of the subject and  $t$  the type of the sentence. The negation operator will correspond to type  $\langle t, t \rangle$ , since, given a proposition, it gives another proposition.

As shown in (18), predicates like  $S_e$  for *miru* 'see' with more than one argument take the arguments one at a time. Thus, a transitive verb will be of type  $\langle e, \langle e, t \rangle \rangle$ , where the leftmost  $e$  is the type of the object, and the rightmost  $e$  is the type of the subject.

Note that both intransitive verbs and verb phrases will be of the same type,  $\langle e, t \rangle$ , since they take exactly one argument (the subject) of type  $e$  to form a sentence of type  $t$ .

What about common nouns like *wakusei* 'planet'? In (9), the predicate corresponding to *wakusei* 'planet' is represented (partially) by a one-place predicate  $P_i$ , which is of type  $\langle e, t \rangle$ . That is, common nouns essentially have the same type  $\langle e, t \rangle$  as intransitive verbs and verb phrases.  $P_i$  thus corresponds to the predicate 'be a planet'.

This is natural, since the denotation of an intransitive verb is the set of entities that have the property expressed by the verb, and the denotation of a common noun is also the set of entities that have the property expressed by the noun. For example, the denotation of the intransitive verb *hikar-u* 'shine' is the set of entities that shine and the denotation of the common noun *wakusei* 'planet' is the set of entities that are planets. Thus, the following sentences have similar logical representations:

- (20) a.  $S_h(v)$   
*Kinsei ga hikar-u.*  
 Venus NOM shine-NPST  
 'Venus shines.'  
 where  $S_h$  is a one-place predicate corresponding to *hikaru* 'shine'.
- b.  $P_i(v)$   
*Kinsei wa wakusei-da.*  
 Venus TOP planet-COP.NPST  
 'Venus is a planet.'

Likewise, most adjectives are of type  $\langle e, t \rangle$ .

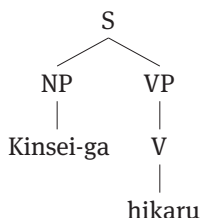
- (21)  $B_i(v)$   
*Kinsei ga akaru-i.*  
 Venus NOM be.bright-NPST  
 'Venus is bright.'

where  $B_r$  is a one-place predicate corresponding to *akarui* ‘be bright’.

Note that the type in the form of  $\langle \alpha, \beta \rangle$  for some linguistic expression is defined in such a way that the semantic object corresponding to the expression takes one argument of type  $\alpha$  and produces an object of type  $\beta$  by *functional application*. In fact, if we assume binary branching in the constituent structure, it is usually the case that one of the two nodes corresponds to a function and the other its argument. Thus, in (20a), repeated here as (22a), the denotation of the intransitive verb *hikar-u* is a function of type  $\langle e, t \rangle$  that takes the denotation of the subject *Kinsei* ‘Venus’.

- (22) a.  $S_h(v)$   
*Kinsei ga hikar-u.*  
 Venus NOM shine-NPST  
 ‘Venus shines.’

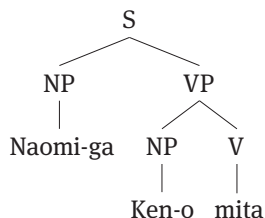
b.



Likewise, in (17), repeated here as (23) in the current notation, the denotation of the transitive verb *mita* is a function (of type  $\langle e, \langle e, t \rangle \rangle$ ) that takes the denotation of the object *Ken* first. The denotation of the verb phrase formed by these constituents then serves as a function (of type  $\langle e, t \rangle$ ) that takes the denotation of the subject *Naomi*.

- (23) a.  $S_e(k)(n)$   
*Naomi ga Ken o mi-ta.*  
 Naomi NOM Ken ACC see-PST  
 ‘Naomi saw Ken.’

b.



Let us introduce a notation for specifying the denotation of a linguistic expression. If  $\alpha$  is a linguistic expression, we use  $\llbracket \alpha \rrbracket$  to represent its denotation. Thus, the above situations will be represented schematically as the following:

- (24) a.  $\llbracket \text{Kinsei-ga hikaru} \rrbracket = \llbracket \text{hikaru} \rrbracket(\llbracket \text{Kinsei} \rrbracket)$   
 b.  $\llbracket \text{Naomi-ga Ken-o mita} \rrbracket = \llbracket \text{Ken-o mita} \rrbracket(\llbracket \text{Naomi} \rrbracket)$   
 $= \llbracket \text{mita} \rrbracket(\llbracket \text{Ken} \rrbracket)(\llbracket \text{Naomi} \rrbracket)$

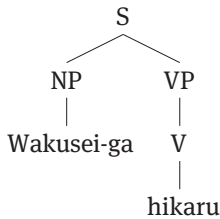
It can be seen that the formula  $\llbracket \text{hikaru} \rrbracket(\llbracket \text{Kinsei} \rrbracket)$  corresponds naturally to the logical formula  $S_h(v)$ , and  $\llbracket \text{mita} \rrbracket(\llbracket \text{Ken} \rrbracket)(\llbracket \text{Naomi} \rrbracket)$  to  $S_e(k)(n)$ .

## 1.6 Generalized quantifiers

So far, the logical representation of a formula in terms of its functional application has been straightforward. The syntactic verb phrase corresponds to a semantic function of type  $\langle e, t \rangle$ , and the subject to a semantic object of type  $e$ . However, if quantification is involved, the correspondence becomes less straightforward. Consider the following sentence and its semantic representation.

- (25) a.  $\exists x [P_i(x) \wedge S_h(x)]$   
*Wakusei ga hikar-u.*  
 planet NOM shine-NPST  
 ‘A planet shines.’

b.



Even though (22) and (25) have exactly the same constituent structure, their semantic representations are quite different. In particular, the logical formula in (25a) doesn't take the form of a functional application, as the function corresponding to the verb phrase ( $S_h$ ) is embedded within a quantificational expression. That is, we will not have the following schema:

- (26)  $\llbracket \text{wakusei-ga hikaru} \rrbracket = \llbracket \text{hikaru} \rrbracket(\llbracket \text{wakusei} \rrbracket)$

Since  $\llbracket \text{hikaru} \rrbracket$  is assumed to be of type  $\langle e, t \rangle$ ,  $\llbracket \text{wakusei} \rrbracket$  must be of type  $e$ . But what is an entity that corresponds to *wakusei*? It is some planet but it cannot be any specific planet.

The solution proposed for the treatment of quantification in natural language was to reverse the function-argument relationship. That is, instead of (26), the schema adopted is like the following:

$$(27) \quad \llbracket \text{wakusei-ga hikaru} \rrbracket = \llbracket \text{wakusei} \rrbracket (\llbracket \text{hikaru} \rrbracket)$$

where  $\llbracket \text{wakusei} \rrbracket$  is of type  $\langle \langle e, t \rangle, t \rangle$ , a function that takes the denotation of a verb phrase as its argument to produce truth values (of type  $t$ ).

In this case,  $\llbracket \text{wakusei} \rrbracket$  will have a denotation like the following:

$$(28) \quad \llbracket \text{wakusei} \rrbracket = \text{a function that takes a function } f \text{ of type } \langle e, t \rangle \text{ as its argument, and becomes true if there is a planet } x \text{ for which } f(x) \text{ is true.}$$

A more compact way of representing denotations like this is to use a form of notation called  $\lambda$ -notation:

$$(29) \quad \llbracket \text{wakusei} \rrbracket = \lambda f. [\exists x [P_i(x) \wedge f(x)]]$$

where  $\lambda f. [\dots f \dots]$  is a function that produces  $[\dots a \dots]$  if it is given an argument  $a$ . Thus, we have the following schema for (25):

$$(30) \quad \begin{aligned} \llbracket \text{wakusei-ga hikaru} \rrbracket &= \llbracket \text{wakusei} \rrbracket (\llbracket \text{hikaru} \rrbracket) \\ &= \lambda f. [\exists x [P_i(x) \wedge f(x)]] (\llbracket \text{hikaru} \rrbracket) \\ &= \exists x [P_i(x) \wedge \llbracket \text{hikaru} \rrbracket (x)] \end{aligned}$$

This kind of treatment of the subject as a quantifier can be generalized to proper names. For example, *Kinsei* can be represented in the following way:

$$(31) \quad \llbracket \text{Kinsei} \rrbracket = \lambda f. [f(v)]$$

That is,  $\llbracket \text{Kinsei} \rrbracket$  is a function that takes a function  $f$  of type  $\langle e, t \rangle$  as its argument, and becomes true if  $v$  (Venus) satisfies  $f$ , i. e.,  $f(v)$  is true.

Thus, instead of (24a), we have the following schema:

$$(32) \quad \llbracket \text{Kinsei-ga hikaru} \rrbracket = \llbracket \text{Kinsei} \rrbracket (\llbracket \text{hikaru} \rrbracket) = \lambda f. [f(v)] (\llbracket \text{hikaru} \rrbracket) = \llbracket \text{hikaru} \rrbracket (v)$$

It can be seen that the final form that naturally results here is equivalent to that of first-order predicate logic. This kind of treatment of noun phrases is called *generalized quantifiers* (Montague 1974, Barwise and Cooper 1981).

Generalized quantifiers allow us to express a variety of quantificational expressions, including some that are difficult, or impossible, to represent using the kinds of quantifiers normally used in traditional predicate logic. Here are some examples.

- (33) a. *subete no wakusei* ‘every planet’  
 $\llbracket \text{subete-no wakusei} \rrbracket = \lambda f. [\forall x [P_i(x) \rightarrow f(x)]]$
- b. *hotondo no wakusei* ‘most planets’  
 $\llbracket \text{hotondo-no wakusei} \rrbracket = \lambda f. [|\{x | P_i(x) \wedge f(x)\}| > |\{x | P_i(x) \wedge \neg f(x)\}|]$
- c. *sukunakutomo 3-tu no wakusei* ‘at least 3 planets’  
 $\llbracket \text{sukunakutomo 3-tu-no wakusei} \rrbracket = \lambda f. [|\{x | P_i(x) \wedge f(x)\}| \geq 3]$

where  $|\{x | \dots x \dots\}|$  is the number of elements in the set of  $x$  such that  $\dots x \dots$  is true. Thus, (33b) gives the denotation where the number of planets that satisfy  $f$  is greater than the number of planets that don’t satisfy  $f$ . Similarly, (33c) specifies that the number of planets that satisfy  $f$  is greater than or equal to 3.

If we can identify prenominal expressions as a kind of determiner in Japanese, the following will be Japanese counterparts to generalized determiners.

- (34) a. *subete no* ‘every’  
 $\llbracket \text{subete no} \rrbracket = \lambda g. \lambda f. [\forall x [g(x) \rightarrow f(x)]]$
- b. *hotondo no* ‘most’  
 $\llbracket \text{hotondo-no} \rrbracket = \lambda g. \lambda f. [|\{x | g(x) \wedge f(x)\}| > |\{x | g(x) \wedge \neg f(x)\}|]$
- c. *sukunakutomo 3-tu no* ‘at least 3’  
 $\llbracket \text{sukunakutomo 3-tu-no} \rrbracket = \lambda g. \lambda f. [|\{x | g(x) \wedge f(x)\}| \geq 3]$

### 1.6.1 Quantifier raising

What happens if a quantificational expression occurs in the position of an object as in the following sentence?

- (35) *Naomi ga wakusei o mi-ta.*  
 Naomi NOM planet ACC see-PST  
 ‘Naomi saw a planet.’

There are several possible approaches to dealing with this. One is to make the type of object NPs a complex one such as  $\langle\langle e, \langle e, t \rangle \rangle, \langle e, t \rangle\rangle$ . That is, the object takes the denotation of a transitive verb as its argument and produces a function of type  $\langle e, t \rangle$ . According to this approach,  $\llbracket \text{wakusei} \rrbracket$  in object position will have the denotation in (36b) and the sentence as a whole will be interpreted following the schema in (36d).

- (36) a.  $\llbracket \text{Naomi} \rrbracket = \lambda f. [f(n)]$   
 b. *wakusei* ‘planet’ (in object position)  
 $\llbracket \text{wakusei} \rrbracket = \lambda g. \lambda y. [\exists x [P_i(x) \wedge g(x)(y)]]$   
 c.  $\llbracket \text{mita} \rrbracket = S_e$   
 d.  $\llbracket \text{Naomi-ga wakusei-o mita} \rrbracket$   
 $= \llbracket \text{Naomi} \rrbracket (\llbracket \text{wakusei} \rrbracket (\llbracket \text{mita} \rrbracket))$   
 $= \llbracket \text{Naomi} \rrbracket (\llbracket \text{wakusei} \rrbracket (S_e))$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda g. \lambda y. [\exists x [P_i(x) \wedge g(x)(y)]] (S_e))$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda y. [\exists x [P_i(x) \wedge S_e(x)(y)]])$   
 $= \lambda f. [f(n)] (\lambda y. [\exists x [P_i(x) \wedge S_e(x)(y)]])$   
 $= \lambda y. [\exists x [P_i(x) \wedge S_e(x)(y)]] (n)$   
 $= \exists x [P_i(x) \wedge S_e(x)(n)]$

The final formula that results naturally from this is one that corresponds to the proposition that there exists a planet that Naomi saw.

A disadvantage of this approach is that it requires different denotations for noun phrases depending on which syntactic position they occur in. Moreover, this approach cannot handle one of the possible interpretations of sentence (37), namely the one given in (37b).

- (37) *Subete no gakusei ga wakusei o mi-ta.*  
 every GEN student NOM planet ACC see-PST  
 ‘Every student saw a planet.’  
 a.  $\forall y [S_i(y) \rightarrow \exists x [P_i(x) \wedge S_e(x)(y)]]$   
 b.  $\exists x [P_i(x) \wedge \forall y [S_i(y) \rightarrow S_e(x)(y)]]$

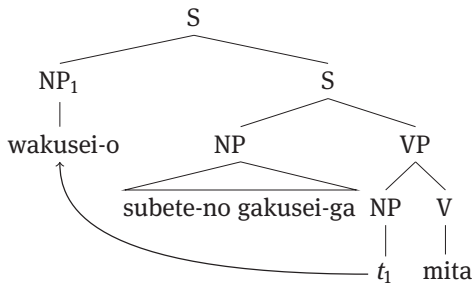
where  $S_i$  is a one-place predicate corresponding to *gakusei* ‘be a student’.

In (37a), each of the students may have seen a different planet, while in (37b), they all saw the same planet. (37a) can be obtained by the following schema if we use the denotation of *wakusei* given in (36b):

- (38) a.  $\llbracket \text{subete-no gakusei} \rrbracket = \lambda f. [\forall y [S_i(y) \rightarrow f(y)]]$   
 b.  $\llbracket \text{wakusei} \rrbracket = \lambda g. \lambda y. [\exists x [P_i(x) \wedge g(x)(y)]]$   
 c.  $\llbracket \text{mita} \rrbracket = S_e$   
 d.  $\llbracket \text{subete-no gakusei-ga wakusei-o mita} \rrbracket$   
      $= \llbracket \text{subete-no gakusei} \rrbracket (\llbracket \text{wakusei} \rrbracket (\llbracket \text{mita} \rrbracket))$   
      $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda g. \lambda y. [\exists x [P_i(x) \wedge g(x)(y)]] (S_e))$   
      $= \lambda f. [\forall y [S_i(y) \rightarrow f(y)]] (\lambda y. [\exists x [P_i(x) \wedge S_e(x)(y)]])$   
      $= \forall y [S_i(y) \rightarrow \exists x [P_i(x) \wedge S_e(x)(y)]]$

However, in order to get the second interpretation, we will have to somehow reverse the scope of the two noun phrases. One way to achieve this effect is to use some kind of ‘raising’ operation in syntax. For example, as is typically assumed in transformational syntax in such cases, the object is assumed to move to the sentence initial position and take scope over the sequence consisting of the subject, the trace of the object, and the verb. This is shown schematically in the following diagram.

(39)



In (39), the trace  $t$  is of type  $e$ , and both *wakusei o* ‘planet’ and *subete no gakusei ga* ‘every student’ are of type  $\langle\langle e, t \rangle, t\rangle$ , i. e., the usual type for generalized quantifiers. The truth condition for this sentence is computed according to the following schema:

- (40)  $\llbracket \text{subete-no gakusei-ga wakusei-o mita} \rrbracket$   
      $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket \text{subete-no gakusei-ga } t_1 \text{ mita} \rrbracket)$   
      $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket \text{subete-no gakusei} \rrbracket (\llbracket \text{mita} \rrbracket (\llbracket t_1 \rrbracket)))$

Some notes are in order here. First, the denotation of a trace is a designated variable which is unique to each trace. By convention, I will use an arbitrary integer for this designation and assume that  $\llbracket t_i \rrbracket = x_i$ , where  $i$  is an integer. Second, the principle of functional application is somewhat modified for the raised NP: it takes as its argument not simply the denotation of its sister, but one with the variable that corre-



sponds to the trace in that denotation lambda-abstracted from it. In the above case, since the trace is  $t_1$ , the lambda variable is  $x_1$ . Note that the type of the sister node of the raised NP is  $t$ . Thus, by lambda abstraction, we have the proper type  $\langle e, t \rangle$ , which can be combined with the raised NP as its argument.<sup>6</sup> Adopting the conventions noted above, the denotation of (39) is calculated in the following way:

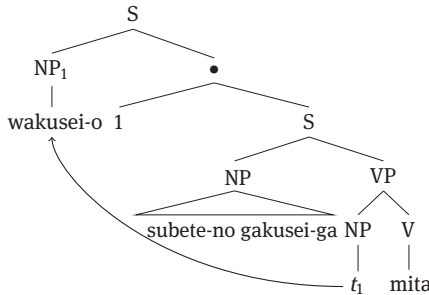
- (41) a.  $\llbracket \text{wakusei} \rrbracket = \lambda f. [\exists x [P_i(x) \wedge f(x)]]$   
 b.  $\llbracket \text{subete-no gakusei} \rrbracket = \lambda f. [\forall y [S_i(y) \rightarrow f(y)]]$   
 c.  $\llbracket \text{mita} \rrbracket = S_e$   
 d.  $\llbracket \text{subete-no gakusei-ga wakusei-o mita} \rrbracket$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket \text{subete-no gakusei-ga } t_1 \text{ mita} \rrbracket)$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket [\text{subete-no gakusei}] (\llbracket \text{mita} \rrbracket (\llbracket t_1 \rrbracket)) \rrbracket)$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket [\text{subete-no gakusei}] (\llbracket \text{mita} \rrbracket (x_1)) \rrbracket)$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. \llbracket [\text{subete-no gakusei}] (S_e(x_1)) \rrbracket)$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. [\lambda f. [\forall y [S_i(y) \rightarrow f(y)]] (S_e(x_1))])$   
 $= \llbracket \text{wakusei} \rrbracket (\lambda x_1. [\forall y [S_i(y) \rightarrow S_e(x_1)(y)])]$   
 $= \lambda f. [\exists x [P_i(x) \wedge f(x)]] (\lambda x_1. [\forall y [S_i(y) \rightarrow S_e(x_1)(y)])]$   
 $= \exists x [P_i(x) \wedge \lambda x_1. [\forall y [S_i(y) \rightarrow S_e(x_1)(y)]](x)]$   
 $= \exists x [P_i(x) \wedge \forall y [S_i(y) \rightarrow S_e(x)(y)]]$

This is exactly what we want for the second interpretation of (37), i.e., (37b).

Note that if we allow the raising of quantifier phrases, the wide-scope reading of the universal quantifier in (37) can be obtained without assuming a different deno-

<sup>6</sup> Another possible treatment of quantifier raising is to explicitly assume a node corresponding to the index of the lambda variable (Heim and Kratzer 1998) as in the following:

(i)

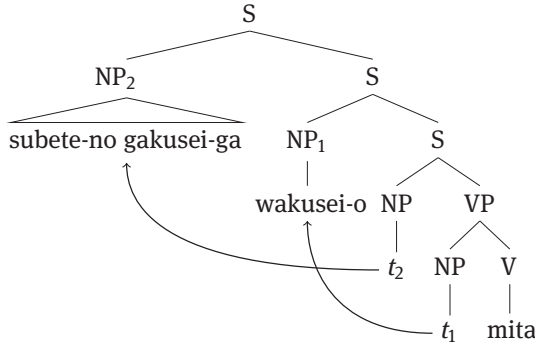


Here the denotation of the numbered node dominated by the  $\bullet$  node is a function of type  $\langle t, \langle e, t \rangle \rangle$  that takes the denotation of its sentential sister node and gives its lambda abstraction:

- (ii)  $\llbracket i \rrbracket = \lambda p. [\lambda x_1. p]$   
 where  $p$  contains a trace  $t_1$ .

tation of the object-position quantifier as in (36). That is, we assume the following doubly-raised structure:

(42)



The denotation of the sentence becomes the following, with the denotation of *wakusei* as in (29) given for the noun at the subject position:

- (43) a.  $\llbracket \text{subete-no gakusei} \rrbracket = \lambda f. [\forall y [S_i(y) \rightarrow f(y)]]$   
 b.  $\llbracket \text{wakusei} \rrbracket = \lambda f. [\exists x [P_i(x) \wedge f(x)]]$   
 c.  $\llbracket \text{mita} \rrbracket = S_e$   
 d.  $\llbracket \text{subete-no gakusei-ga wakusei-o mita} \rrbracket$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda x_2. [\llbracket \text{wakusei} \rrbracket (\lambda x_1. [\llbracket t_2 t_1 \text{ mita} \rrbracket])])$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda x_2. [\llbracket \text{wakusei} \rrbracket (\lambda x_1. S_e(x_1)(x_2))])$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda x_2. [\lambda f. [\exists x [P_i(x) \wedge f(x)]] (\lambda x_1. S_e(x_1)(x_2))])$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda x_2. [\exists x [P_i(x) \wedge \lambda x_1. S_e(x_1)(x_2)(x)]])$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda x_2. [\exists x [P_i(x) \wedge S_e(x)(x_2)]])$   
 $= \lambda f. [\forall y [S_i(y) \rightarrow f(y)]] (\lambda x_2. [\exists x [P_i(x) \wedge S_e(x)(x_2)]])$   
 $= \forall y [S_i(y) \rightarrow \lambda x_2. [\exists x [P_i(x) \wedge S_e(x)(x_2)]](y)]$   
 $= \forall y [S_i(y) \rightarrow [\exists x [P_i(x) \wedge S_e(x)(y)]]]$

## 1.7 The use of proforms as bound variables

### 1.7.1 Reflexive

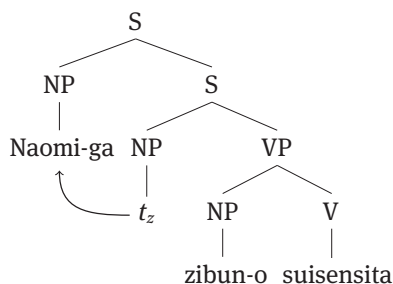
The treatment of traces sketched above, or some counterpart to it depending on the syntactic framework, can be extended to pronouns. Consider the following sentence involving the reflexive *zibun* ‘self’:<sup>7</sup>

- (44)     *Naomi ga zibun o suisen-si-ta.*  
           Naomi NOM self ACC recommend-do-PST  
           ‘Naomi recommended herself.’

We assume that the denotation of *zibun* is the designated variable  $z$  and the sentence involving *zibun* has a raised structure, with a trace  $t_z$  whose denotation is also  $z$ .<sup>8</sup>

The syntactic tree (LF) of (44) and its denotation are as follows, where  $R_e$  is a two-place predicate corresponding to the denotation of *suisen-si-ta* ‘recommend-PST’.

- (45) a.



<sup>7</sup> So-called Japanese pronouns like *kanozōyo* and *kare* are known to not behave exactly like those in English (cf. Hoji 1991). The behavior of *zibun* is also known to be somewhat different from English reflexives such as *herself*. I will not be concerned with such differences here, and will limit myself to a treatment of clear cases of syntactic binding in the following.

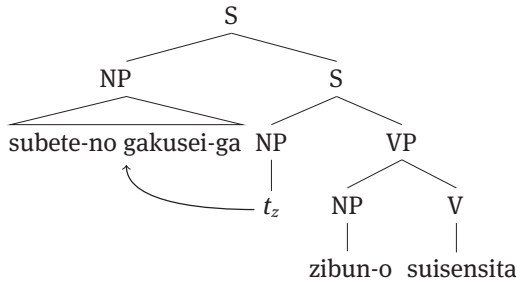
<sup>8</sup> Since the antecedent of Japanese reflexives is usually restricted to the subject, this kind of raising has to be constrained so as to apply only to the subject. There are several ways to achieve this, but since this issue would involve us in the details of a particular syntactic framework, I will not discuss it here.

- b.  $\llbracket \text{Naomi-ga } t_z \text{ zibun-o suisen-sita} \rrbracket$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda z . \llbracket t_z \text{ zibun-o suisen-sita} \rrbracket)$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda z . \llbracket \text{zibun-o suisen-sita} \rrbracket (\llbracket t_z \rrbracket))$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda z . \llbracket \text{suisen-sita} \rrbracket (\llbracket \text{zibun} \rrbracket) (\llbracket t_z \rrbracket))$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda z . \llbracket \text{suisen-sita} \rrbracket (z)(z))$   
 $= \llbracket \text{Naomi} \rrbracket (\lambda z . [R_e(z)(z)])$   
 $= \lambda f . f(n)(\lambda z . [R_e(z)(z)])$   
 $= \lambda z . [R_e(z)(z)](n)$   
 $= R_e(n)(n)$

Since *Naomi ga* above is treated as a generalized quantifier, exactly the same treatment can be applied to a quantificational phrase like *subete no gakusei ga*:

- (46) *Subete no gakusei ga zibun o suisen-si-ta.*  
 Every GEN student NOM self ACC recommend-do-PST  
 ‘Every student recommended herself.’

- (47) a.



- b.  $\llbracket \text{subete-no gakusei-ga } t_z \text{ zibun-o suisen-sita} \rrbracket$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda z . \llbracket t_z \text{ zibun-o suisen-sita} \rrbracket)$   
 $= \llbracket \text{subete-no gakusei} \rrbracket (\lambda z . [R_e(z)(z)])$   
 $= \lambda f . [\forall x [S_i(x) \rightarrow f(x)]] (\lambda z . [R_e(z)(z)])$   
 $= \forall x [S_i(x) \rightarrow \lambda z . [R_e(z)(z)] (x)]$   
 $= \forall x [S_i(x) \rightarrow R_e(x)(x)]$

That is, for every  $x$  who is a student,  $x$  recommended  $x$ . Since the interpretation of *zibun* ‘self’ here varies depending on the denotation of the antecedent (the subject), the reflexive behaves like a bound variable in the sense of a logical formula.

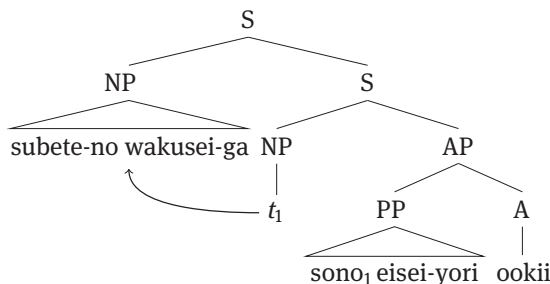
## 1.7.2 Pronouns

Other pronominal expressions may also sometimes behave as bound variables. For example, *sono* ‘its’ in a sentence like the following is interpreted with respect to the antecedent, namely as coreferential to each instance of the subject *wakusei* ‘planet’:

- (48) *Subete no wakusei ga sono eisei yori ooki-i.*  
 Every GEN planet NOM its satellite than be.large-NPST  
 ‘Every planet is larger than its satellites.’

This kind of sentence is also assumed to involve a raising structure, and it is accordingly given a denotation by assigning an arbitrarily indexed variable to the pronominal expression and a corresponding lambda abstraction using that variable.<sup>9,10</sup>

- (49) a.



- b.  $\llbracket \text{subete-no wakusei-ga } t_1 \text{ sono}_1 \text{ eisei-yori ookii} \rrbracket$   
 $= \llbracket \text{subete-no wakusei} \rrbracket (\lambda x_1 . \llbracket t_1 \text{ sono}_1 \text{ eisei-yori ookii} \rrbracket)$   
 $= \llbracket \text{subete-no wakusei} \rrbracket (\lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow L_a(x_1)(y)])]$   
 $= \lambda f . [\forall x [P_i(x) \rightarrow f(x)]] (\lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow L_a(x_1)(y)])]$   
 $= \forall x [P_i(x) \rightarrow \lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow L_a(x_1)(y)]](x)]$   
 $= \forall x [P_i(x) \rightarrow \forall y [S_a(y)(x) \rightarrow L_a(x)(y)]]$

<sup>9</sup> Since the antecedent of such expressions as *sono* is not restricted to the subject, the raising can occur from any argument position.

<sup>10</sup> In (49a), *sono* is assumed to have the same index as that of the trace of the raised NP. In (49b),  $S_a$  is a two-place predicate corresponding to *eisei* ‘be a satellite of’ and  $L_a$  is a two-place predicate corresponding to *ookii* ‘be larger than’. The denotation of *sono<sub>1</sub> eisei-yori* is of type  $\langle \langle e, \langle e, t \rangle \rangle, \langle e, t \rangle \rangle$  and assumed to involve implicit universal quantification as in:

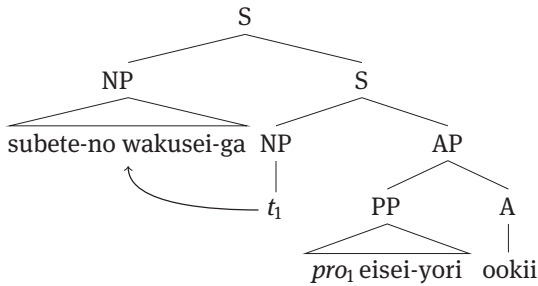
(i)  $\llbracket \text{sono}_1 \text{ eisei-yori} \rrbracket = \lambda f . \lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow f(x_1)(y)]]$

It is usually the case that categories A and AP have the same type as V and VP and are of type  $\langle e, t \rangle$ . However, some Japanese adjectives, such as  $\llbracket \text{ookii} \rrbracket$ , seem to state a property relative to some implicit standard, meaning ‘be larger than’. Hence it is assumed to be of type  $\langle e, \langle e, t \rangle \rangle$  and symbolized as  $L_a$  here.

### 1.7.3 Zero pronoun

Japanese is known to have so-called *zero pronouns*. That is, it is possible for there to be no phonologically perceivable counterpart at the position where an audible pronoun is expected in English. For example, an alternative way of expressing the same proposition as (49) is the following, where  $pro_1$  is a zero pronoun, whose denotation is assumed to be the same as that of an explicit pronoun such as  $sono_1$ , i. e.,  $x_1$ :

(50) a.



- b.  $\llbracket \text{subete-no wakusei-ga } t_1 \text{ } pro_1 \text{ eisei-yori ookii} \rrbracket$   
 $= \llbracket \text{subete-no wakusei} \rrbracket (\lambda x_1 . \llbracket t_1 \text{ } pro_1 \text{ eisei-yori ookii} \rrbracket)$   
 $= \llbracket \text{subete-no wakusei} \rrbracket (\lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow L_a(x_1)(y)])]$   
 $= \lambda f . [\forall x [P_l(x) \rightarrow f(x)]] (\lambda x_1 . [\forall y [S_a(y)(x_1) \rightarrow L_a(x_1)(y)])]$   
 $= \forall x [P_l(x) \rightarrow \forall y [S_a(y)(x) \rightarrow L_a(x)(y)]]$

### 1.7.4 Sloppy/strict ambiguity

The following sentence can be interpreted in two ways:

- (51) *Naomi ga ototoo o suisen-si-ta. Ken mo soo si-ta.*  
 Naomi NOM brother ACC recommend-do-PST Ken also so do-PST  
 ‘Naomi recommended her brother. Ken did so, too.’

- a. Naomi recommended her brother. Ken recommended his brother, too.  
 b. Naomi recommended her brother. Ken recommended her brother, too.

Here, the noun *ototoo* ‘brother’ is interpreted assuming an unpronounced zero pronoun corresponding to Naomi. Thus in the first sentence, *ototoo* is actually interpreted as *pro ototoo*, where *pro* is coindexed with *Naomi*. The interpretation in (51a) is called the *sloppy identity* interpretation, while that in (51b) is called the *strict identity* interpretation (Ross 1967).

These two interpretations can be obtained by making distinction about which part of the preceding sentence to which the phrase *soo sita* ‘did do’ refers. The first sentence has the following denotation:

- (52) a.  $\llbracket \textbf{pro}_1 \textbf{otooto} \rrbracket = \iota x B_R(x)(x_1)$   
 where  $B_R$  is a two-place predicate corresponding to *otooto* ‘be a brother of’ and  $\iota x P(x)$  denotes a unique individual that satisfies the property  $P$ .
- b.  $\llbracket \textbf{Naomi-ga } t_1 \textbf{ pro}_1 \textbf{otooto-o suisen-sita} \rrbracket$   
 $= \llbracket \textbf{Naomi} \rrbracket (\lambda x_1 . \llbracket t_1 \textbf{ pro}_1 \textbf{otooto-o suisen-sita} \rrbracket)$   
 $= \lambda f . f(n)(\lambda x_1 . [R_e(\iota x B_R(x)(x_1))(x_1)])$   
 $= \lambda x_1 . [R_e(\iota x B_R(x)(x_1))(x_1)](n)$   
 $= R_e(\iota x B_R(x)(n))(n)$

Here, we can identify two sub-formulae of type  $\langle e, t \rangle$ :  $\lambda x_1 [R_e(\iota x B_R(x)(x_1))(x_1)]$  and  $R_e(\iota x B_R(x)(n)) (= \lambda y . R_e(\iota x B_R(x)(y))(n))$ , both of which give  $R_e(\iota x B_R(x)(n))(n)$  if it is fed as the argument of  $\llbracket \textbf{Naomi} \rrbracket = \lambda f . f(n)$ .

If *soo sita* ‘did so’ in the second sentence *Ken-mo soo sita* ‘Ken did so, too’ is interpreted as corresponding to the former, we have the sloppy identity interpretation. On the other hand, if it is interpreted as corresponding to the latter, we have the strict identity interpretation. The denotations for the second sentence are calculated in the following way:

- (53) a. (sloppy identity)  $\llbracket \textbf{Ken-mo soo sita} \rrbracket = \llbracket \textbf{Ken} \rrbracket (\lambda x_1 [R_e(\iota x B_R(x)(x_1))(x_1)])$   
 $= \lambda f . f(k)(\lambda x_1 . [R_e(\iota x B_R(x)(x_1))(x_1)])$   
 $= \lambda x_1 . [R_e(\iota x B_R(x)(x_1))(x_1)](k)$   
 $= R_e(\iota x B_R(x)(k))(k)$
- b. (strict identity)  $\llbracket \textbf{Ken-mo soo sita} \rrbracket = \llbracket \textbf{Ken} \rrbracket (R_e(\iota x B_R(x)(n)))$   
 $= \lambda f . f(k)(R_e(\iota x B_R(x)(n)))$   
 $= R_e(\iota x B_R(x)(n))(k)$

## 1.8 Modal logic and possible worlds

The kind of logic we have been using so far is purely extensional in the sense that truth conditions are stated in terms of the way the denotation of a linguistic expression (e. g., the truth values of a sentence) is calculated in a fixed state of affairs (situation). There are, however, sentences that involve *intensions*, that is, sentences whose denotation depends on the particular situation. For example, the following are typical intensional sentences:

- (54) a. *Kodomo ni wa kanarazu oya ga ar-u.*  
 child DAT TOP necessarily parent NOM be-NPST  
 ‘A child necessarily has a parent.’
- b. *Isya wa onnanohito kamosirenai.*  
 doctor TOP woman may  
 ‘The doctor may be female.’

Note that the truth value of such sentences cannot be determined solely by its denotation in the current situation. Rather, it depends on its denotation in other conceivable situations. That is, the denotation of (54a) cannot be determined solely by the denotation of *Kodomo ni wa oya ga aru* ‘A child has a parent’ in the current situation. Similarly, the denotation of (54b) cannot be determined solely by the denotation of *Isya wa onnanohito (da)* ‘The doctor is female’ in the current situation.

The kind of logic that takes various possible situations into account is called *modal logic*, where there are at least two so-called *modal operators* that correspond to necessity, on one hand, and possibility, on the other. These are usually symbolized as  $\Box$  and  $\Diamond$ , respectively.

The semantics of these modal operators involves what are called *possible worlds*. The set of possible worlds includes every world that can possibly be conceived of. The world we reside in is called the *actual world*. In addition to the actual world, we can think of imaginary worlds of various kinds, such as a fairy-tale world like *Onigashima* ‘Demon’s Island,’ a world in the past or future, a world where the Earth has two moons, and so on.

Intuitively, the semantics of the modal operators looks like the following.

- (55) a.  $\Box\phi$  is true if  $\phi$  is true in every possible world that is relevant to the actual world.
- b.  $\Diamond\phi$  is true if  $\phi$  is true in some possible world that is relevant to the actual world.

Here, ‘relevance’ depends on the kind of modality. For example, the modality in (54) above is sometimes called *logical modality*, where there is no restriction as to its relevance. That is, denotations are evaluated in terms of every possible world.

On the other hand, the modality in (56) below is called *epistemic modality*.

- (56) a. *Naomi ga Kinsei o mi-ta nitigainai.*  
 Naomi NOM Venus ACC see-PST must  
 ‘Naomi must have seen Venus.’
- b. *Naomi ga Kinsei o mi-ta kamosirenai.*  
 Naomi NOM Venus ACC see-PST may  
 ‘Naomi may have seen Venus.’



Note that the denotations of these sentences aren't determined solely by the denotations of the embedded sentence *Naomi ga Kinsei o mita* 'Naomi saw Venus' in the actual world. They are determined by the denotation of the embedded sentence in other possible worlds.

For sentence-final modal expressions, we will use a version of modal operators as shown below. Note that, since the denotation of a modal linguistic expression depends on the world in which the expression is evaluated, we will write denotations as  $\llbracket \phi \rrbracket^w$ , where  $w$  is the world in which  $\phi$  is to be evaluated.

- (57) a.  $\llbracket \text{nitigainai} \rrbracket^w = \lambda p . [\Box_{ep} p]$   
 b.  $\llbracket \text{kamosirenai} \rrbracket^w = \lambda p . [\Diamond_{ep} p]$

The two epistemic modal operators are defined in the following way, where to be *epistemically relevant to the actual world* means to be consistent with what is known to be true in the actual world.

- (58) a.  $\Box_{ep} \phi$  is true if  $\phi$  is true in every possible world that is epistemically relevant to the actual world.  
 b.  $\Diamond_{ep} \phi$  is true if  $\phi$  is true in some possible world that is epistemically relevant to the actual world.

The sentences in (56) will accordingly have the following denotations.

- (59) a.  $\llbracket \text{Naomi-ga Kinsei-o mita nitigainai} \rrbracket^w$   
 $= \llbracket \text{nitigainai} \rrbracket^w (\llbracket \text{Naomi-ga Kinsei-o mita} \rrbracket^w)$   
 $= \llbracket \text{nitigainai} \rrbracket^w (S_e(v)(n))$   
 $= \lambda p . [\Box_{ep} p](S_e(v)(n)) = \Box_{ep} S_e(v)(n)$   
 b.  $\llbracket \text{Naomi-ga Kinsei-o mita kamosirenai} \rrbracket^w$   
 $= \llbracket \text{kamosirenai} \rrbracket^w (\llbracket \text{Naomi-ga Kinsei-o mita} \rrbracket^w)$   
 $= \llbracket \text{kamosirenai} \rrbracket^w (S_e(v)(n))$   
 $= \lambda p . [\Diamond_{ep} p](S_e(v)(n)) = \Diamond_{ep} S_e(v)(n)$

Another kind of modality is *deontic modality*, which involves duty (obligation) and permission, as in the following:<sup>11</sup>

<sup>11</sup> Note that, unlike English, Japanese uses different expressions for epistemic modality versus deontic modality. Thus, even though I have used the same English words ('must' and 'may') in the glosses here, the Japanese expressions here are not ambiguous in the same way as the corresponding English expressions are.

- (60) a. *Naomi wa Ken to hanasa-nakutewanaranai.*  
 Naomi TOP Ken COM speak-must  
 ‘Naomi has to speak with Ken.’
- b. *Naomi wa Ken to hanasi-temoyoi.*  
 Naomi TOP Ken COM speak-may  
 ‘Naomi is allowed to speak with Ken.’

For these sentence-final modal expressions, we will use another version of modal operators as shown below.

- (61) a.  $\llbracket \text{nakutewanaranai} \rrbracket^w = \lambda p . [\Box_{de} p]$   
 b.  $\llbracket \text{temoyoi} \rrbracket^w = \lambda p . [\Diamond_{de} p]$

The two deontic modal operators are defined in the following way, where to be *deontically relevant to the actual world* means to be consistent with rules of conduct in the actual world.

- (62) a.  $\Box_{de} \phi$  is true if  $\phi$  is true in every possible world that is deontically relevant to the actual world.  
 b.  $\Diamond_{de} \phi$  is true if  $\phi$  is true in some possible world that is deontically relevant to the actual world.

The sentences in (60) will accordingly have the following denotations, where  $S_p$  is a two-place predicate corresponding to *hanasu* ‘speak with’.

- (63) a.  $\llbracket \text{Naomi-wa Ken to hanasa-nakutewanaranai} \rrbracket^w$   
 $= \llbracket \text{nakutewanaranai} \rrbracket^w (\llbracket \text{Naomi-wa Ken to hanasu} \rrbracket^w)$   
 $= \llbracket \text{nakutewanaranai} \rrbracket^w (S_p(k)(n))$   
 $= \lambda p . [\Box_{de} p](S_p(k)(n)) = \Box_{de} S_p(k)(n)$
- b.  $\llbracket \text{Naomi-wa Ken to hanasi-temoyoi} \rrbracket^w$   
 $= \llbracket \text{temoyoi} \rrbracket^w (\llbracket \text{Naomi-wa Ken to hanasu} \rrbracket^w)$   
 $= \llbracket \text{temoyoi} \rrbracket^w (S_p(k)(n))$   
 $= \lambda p . [\Diamond_{de} p](S_p(k)(n)) = \Diamond_{de} S_p(k)(n)$

There are other kinds of non-epistemic modality (sometimes called *root modality* as a cover term) other than deontic modality involving such concepts as ability, authority, volition, etc. It should be possible to define these in ways parallel to our definitions of epistemic and deontic modality by setting up suitable relevance relations for them.

## 1.9 Intensional logic and opacity

### 1.9.1 Intensionality

Consider the following sentences:<sup>12</sup>

- (64) a. *Kion wa 30 do da.*  
 temperature TOP 30 degrees COP.NPST  
 ‘The temperature is 30 degrees.’
- b. *Kion wa zyoosyoo-tyuu da.*  
 temperature TOP rising-midst COP.NPST  
 ‘The temperature is rising.’
- c. *\*30 do wa zyoosyoo-tyuu da.*  
 30 degrees TOP rising-midst COP.NPST  
 ‘(lit.) 30 degrees is rising.’

If both *kion* ‘temperature’ and *30 do* ‘30 degrees’ were extensional, then it should be possible to substitute the latter for the former in (64b), as in (64c), but this results in an unacceptable sentence. This is because, unlike in (64a), *kion* in (64b) is intensional and the predicate *zyoosyootyuu da* ‘is rising’ can only be used of an intensional entity.

To make possible a formal treatment of intensional expressions, let us introduce a new type *s*. Generally speaking, an intensional individual (individual concept) is of type  $\langle s, e \rangle$ , a function from a world to an extensional individual. Thus, *kion* is of type  $\langle s, e \rangle$ , a function that yields the temperature given a world (time and place). The subject *kion* in (64a) refers to the value of this function when applied to the world of evaluation, and *30 do da* is of type  $\langle e, t \rangle$ . Thus, the denotation of (64a) is calculated in the following way:<sup>13</sup>

- (65) a.  $\llbracket \mathbf{30\ do\ da} \rrbracket^w = \lambda x . [x \text{ is 30 degrees}]$
- b.  $\llbracket \mathbf{kion} \rrbracket^w = \lambda u . [\text{the temperature at } u]$
- c.  $\llbracket \mathbf{kion-wa\ 30\ do\ da} \rrbracket^w$   
 $= \llbracket \mathbf{30\ do\ da} \rrbracket^w (\llbracket \mathbf{kion} \rrbracket^w (w))$   
 $= \llbracket \mathbf{30\ do\ da} \rrbracket^w (\lambda u . [\text{the temperature at } u](w))$   
 $= \lambda x . [x \text{ is 30 degrees}](\text{the temperature at } w)$   
 $= \text{the temperature at } w \text{ is 30 degrees}$

<sup>12</sup> These are Japanese counterparts to English sentences appearing in Montague (1974).

<sup>13</sup> I will give a more detailed semantics of the copula *da* in Section 2.5.

On the other hand,  $\llbracket \text{zyoosyootyuu da} \rrbracket^w$  is of type  $\langle \langle s, e \rangle, t \rangle$  and the denotation of (64b) involves what is itself a function of type  $\langle s, e \rangle$  as the denotation of *kion* ‘temperature’, rather than its value at the given world.

- (66) a.  $\llbracket \text{zyoosyootyuu da} \rrbracket^w = \lambda f. [f \text{ is an increasing function}]$   
 b.  $\llbracket \text{kion} \rrbracket^w = \lambda u. [\text{the temperature at } u]$   
 c.  $\llbracket \text{kion-wa zyoosyootyuu da} \rrbracket^w = \llbracket \text{zyoosyootyuu da} \rrbracket^w (\llbracket \text{kion} \rrbracket^w)$   
 $= \lambda f. [f \text{ is an increasing function}] (\lambda u. [\text{the temperature at } u])$   
 $= \lambda u. [\text{the temperature at } u] \text{ is an increasing function}$

The unacceptability of (64c) results from type mismatch: while *zyoosyootyuu da* requires an argument of type  $\langle \langle s, e \rangle, t \rangle$ , the type of *30 do* is *e*, not a function. Thus, *zyoosyootyuu da* cannot take *30 do* as its argument.<sup>14</sup>

- (67)  $\llbracket \text{30 do-wa zyoosyootyuu da} \rrbracket^w = * \llbracket \text{zyoosyootyuu da} \rrbracket^w (\llbracket \text{30 do} \rrbracket^w)$

## 1.9.2 Opacity

There are verbs that involve embedded sentences that are interpreted intensionally. For example, consider the following sentences:

- (68) *Naomi ga Kasei ga Kinsei yori ooki-i to*  
 Naomi NOM Mars NOM Venus than be.large-NPST QUOT  
*sinzi-tei-ru.*  
 believe-STAT-NPST  
 ‘Naomi believes that Mars is larger than Venus.’

<sup>14</sup> An apparently similar interpretation of *kion* involves what is called a concealed question as in:

- (i) *Naomi wa kyoo no kion o siri-ta-gat-tei-ru.*  
 Naomi TOP today GEN temperature ACC know-DESI-show.signs.of-PROG-NPST  
 ‘Naomi wants to know today’s temperature.’

Here, what *kion* denotes is not exactly the current temperature or the function that gives the current temperature. Rather it is equivalent to the following paraphrase:

- (i) *Naomi wa kyoo no kion ga nando ka*  
 Naomi TOP today GEN temperature NOM what-degree Q  
*siri-ta-gat-tei-ru.*  
 know-DES-show.signs.of-PROG-NPST  
 ‘Naomi wants to know what today’s temperature is.’

I will briefly discuss the semantics of questions containing concealed questions in Section 2.6.

Since Mars is smaller than Venus in the actual world, what Naomi believes is false but the sentence as a whole can be true if Mars were larger than Venus in a world that is consistent with what Naomi believes. In this sense, verbs like *sinziru* introduce an *opaque context* where the truth conditions differ from those in the actual world. This is in sharp contrast with sentences involving *factual verbs* for which the truth of the complement sentence is presupposed:

- (69) #Naomi ga Kasei ga Kinsei yori ooki-i koto o  
 Naomi NOM Mars NOM Venus than be.large-NPST COMP ACC  
*sit-tei-ru.*  
 come.to.know-RES-NPST  
 ‘(lit.) Naomi knows that Mars is larger than Venus.’

where the marker # indicates semantic anomaly, since Mars is actually not larger than Venus.

Thus,  $\llbracket \text{sinziru} \rrbracket^w$  can be analyzed as a function of type  $\langle \langle s, t \rangle, \langle e, t \rangle \rangle$ , with the following truth condition:

- (70)  $\llbracket \text{sinziru} \rrbracket^w = \lambda p . \lambda x . B_i(p)(x)$   
 where  $B_i$  is a two-place predicate of type  $\langle \langle s, e \rangle, \langle e, t \rangle \rangle$  such that  $B_i(p)(x)$  is true iff  $p(x)$  is true in every world  $w'$  that is consistent with what  $x$  believes in  $w$ .

Thus, the denotation of (68) is calculated in the following way:

- (71)  $\llbracket \text{Naomi-ga Kasei-ga Kinsei-yori ookii to sinziteiru} \rrbracket^w$   
 $= \llbracket \text{Naomi} \rrbracket^w (\llbracket \text{Kasei-ga Kinsei-yori ookii to sinziteiru} \rrbracket^w)$   
 $= \llbracket \text{Naomi} \rrbracket^w (\llbracket \text{sinziru} \rrbracket^w (\llbracket \text{Kasei-ga Kinsei-yori ookii} \rrbracket^w))$   
 $= \llbracket \text{Naomi} \rrbracket^w (\llbracket \text{sinziru} \rrbracket^w (\hat{L}_a(v)(m)))$   
 $= \llbracket \text{Naomi} \rrbracket^w (\lambda p . \lambda x . [B_i(p)(x)](\hat{L}_a(v)(m)))$   
 $= \llbracket \text{Naomi} \rrbracket^w (\lambda x . B_i(\hat{L}_a(v)(m))(x))$   
 $= \lambda f . [f(n)](\lambda x . [B_i(\hat{L}_a(v)(m))(x)])$   
 $= \lambda x . [B_i(\hat{L}_a(v)(m))(x)](n)$   
 $= B_i(\hat{L}_a(v)(m))(n)$   
 where  $\hat{\phi}$  is a function of type  $\langle s, t \rangle$  (the *intension* of  $\phi$ ) such that for every world  $w$ ,  $\hat{\phi}(w)$  is true if  $\phi$  is true in  $w$ .

Thus, according to the above truth condition, *Naomi ga Kasei ga Kinsei-yori ookii to sinzi-tei-ru* ‘Naomi believes that Mars is larger than Venus’ is true in  $w$  if  $L_a(v)(m)$  (Mars is larger than Venus) is true in every world  $w'$  that is consistent with what Naomi believes in  $w$ .

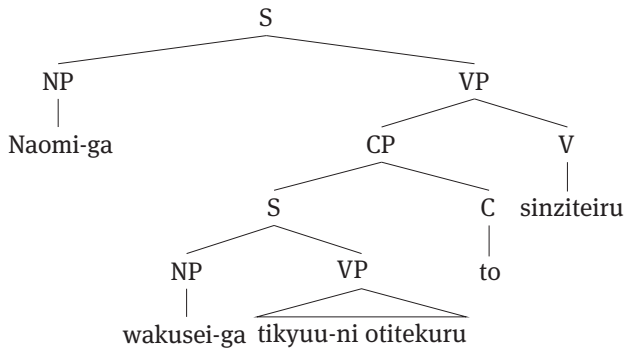
Opaque contexts can have scope interaction with quantifiers. For example, the following sentence is ambiguous as to the scope of the existential quantifier.

- (72) a. *Naomi ga wakusei ga Tikyuu ni otite-ku-ru to sinzi-tei-ru.*  
 Naomi NOM planet NOM Earth GOAL fall-come-NPST QUOT  
 believe-STAT-NPST  
 'Naomi believes that a planet will fall down to Earth.'
- b.  $\exists x [P_l(x) \wedge B_l(\neg F_a(x))(n)]$
- c.  $B_l(\neg \exists x [P_l(x) \wedge F_a(x)])(n)$   
 where  $F_a$  is a one-place predicate corresponding to *fall down to the Earth*.

(72b) assumes the existence of a planet in the actual world and is called the *de re* (referential) reading. (72c) only assumes the existence of a planet in the worlds that are consistent with what Naomi believes and is called the *de dicto* (non-referential) reading.

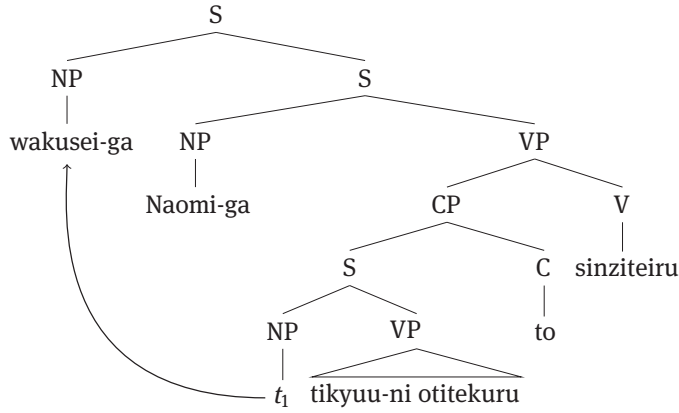
The *de dicto* interpretation can be obtained straightforwardly from the following constituent structure in the way sketched in (71).

(73)



One way to obtain the *de re* interpretation, on the other hand, would involve raising of the existential quantifier as shown in (74):

(74)



A calculation of the truth conditions here is sketched below.

$$\begin{aligned}
 (75) \quad & \llbracket \text{Naomi-ga wakusei-ga tikyuu-ni otitekuru to sinziteiru} \rrbracket^w \\
 &= \llbracket \text{wakusei} \rrbracket^w (\lambda x_1. \llbracket \text{Naomi-ga } t_1 \text{ tikyuu-ni otitekuru to sinziteiru} \rrbracket^w) \\
 &= \llbracket \text{wakusei} \rrbracket^w (\lambda x_1. [B_l(\wedge F_a(x_1))(n)]) \\
 &= \lambda f. [\exists x [P_l(x) \wedge f(x)]] (\lambda x_1. [B_l(\wedge F_a(x_1))(n)]) \\
 &= \exists x [P_l(x) \wedge B_l(\wedge F_a(x))(n)]
 \end{aligned}$$

## 1.10 Relationships among sentences

### 1.10.1 Entailment

So far, we have considered sentences that have definite truth values as their denotation. When a sentence has the truth value *true*, we say the sentence is true (or holds). Thus, the following are equivalent way of stating the logical status of sentence S:

- (76) a.  $\llbracket S \rrbracket^w = 1$   
 b. S is true in w.

The locution in the above is called a *meta-language*, while the formula expressed in S itself is an *object language*. The former is a language to talk about the latter language. In this chapter, the object language is Japanese when the semantics of Japanese sentences is under discussion, while it is a logical formula when their semantics is under discussion.

Besides truth, there are other meta-language expressions for talking about sentences, one of which is implication.

- (77) a.  $S_1$ : *Naomi ga Kinsei o mi-ta*  
           Naomi NOM Venus ACC see-PST  
           ‘Naomi saw Venus’
- b. *naraba*  
    if-then
- c.  $S_2$ : *Naomi wa wakusei o mit-a.*  
       Naomi TOP planet ACC see-PST  
       ‘Naomi saw a planet.’
- d.  $S_1 \Rightarrow S_2$
- e.  $S_e(v)(n) \Rightarrow \exists x [P_l(x) \wedge S_e(x)(n)]$

In (77d), the new symbol is a symbol in the meta-language that shows that if sentence  $S_1$  is true then it is always the case that  $S_2$  is true. That is, the truth of  $S_1$  implies the truth of  $S_2$ . In this case,  $S_1$  is said to *entail* sentence  $S_2$ . The same locution applies to predicate logic formulae, as shown in (77e): the formula on the left-hand side *entails* the formula on the right-hand side.

In the case of logical formulae, as in (77e), entailment and conditional meaning are related in the following way:

- (78)  $[p \Rightarrow q]$  (i. e.,  $p$  entails  $q$ ) iff  $[p \rightarrow q]$  is true.

Thus, if (77e) holds, the following formula is true.

- (79)  $S_e(v)(n) \rightarrow \exists x [P_l(x) \wedge S_e(x)(n)]$

Note that the above conditional is not a logical truth but rather depends crucially on the fact that Venus is a planet ( $P_l(v)$ ). If we add this fact, the following becomes a logical truth (*tautology*).

- (80)  $[P_l(v) \wedge S_e(v)(n)] \rightarrow \exists x [P_l(x) \wedge S_e(x)(n)]$

In terms of entailment, (81a) below, together with (81b), entails (81c).

- (81) a.  $S_e(v)(n)$   
       b.  $P_l(v)$   
       c.  $\exists x [P_l(x) \wedge S_e(x)(n)]$

Or, in short:



$$(82) \quad [P_l(v) \wedge S_e(v)(n)] \Rightarrow \exists x [P_l(x) \wedge S_e(x)(n)]$$

In fact, the above relationship is a case of *existential generalization* and always holds regardless of the predicates involved. In general, the following pattern of entailment always holds, where *a* is an individual constant:

$$(83) \quad \psi(a) \Rightarrow \exists x \psi(x)$$

Another general pattern of entailment is *universal instantiation*, which has the following scheme:

$$(84) \quad \forall x \psi(x) \Rightarrow \psi(a)$$

The following is an example:

- (85) a.  $S_1$ : Naomi ga subete no wakusei o mi-ta  
           Naomi NOM all GEN planet ACC see-PST  
           ‘Naomi saw all the planets’
- b. naraba  
    if-then
- c.  $S_2$ : Naomi wa Kinsei o mi-ta.  
       Naomi TOP Venus ACC see-PST  
       ‘Naomi saw Venus.’
- d.  $S_1 \Rightarrow S_2$
- e.  $\forall x [P_l(x) \rightarrow S_e(x)(n)] \Rightarrow S_e(v)(n)$

Again, the above entailment crucially depends on the fact that Venus is a planet. That is, (86a) below, together with (86b), entails (86c).

- (86) a.  $\forall x [P(x) \rightarrow S_e(x)(n)]$   
       b.  $P_l(v)$   
       c.  $S_e(v)(n)$

Or, in short:

$$(87) \quad [P(v) \wedge \forall x [P(x) \rightarrow S_e(x)(n)]] \Rightarrow S_e(v)(n)$$

The ‘proof’ of the above entailment is as follows.

- (88) a.  $P_l(v)$  (given)  
 b.  $\forall x [P(x) \rightarrow S_e(x)(n)]$  (given)  
 c.  $P_l(v) \rightarrow S_e(v)(n)$  (universal instantiation)  
 d.  $S_e(v)(n)$  (modus ponens)

where *modus ponens* is a valid inference pattern of propositional logic shown below, where (89a) and (89b) together entail (89c).

- (89) a.  $\phi$   
 b.  $\phi \rightarrow \psi$   
 c.  $\psi$

Or, in short,

$$(90) \quad \phi \wedge [\phi \rightarrow \psi] \Rightarrow \psi$$

Note that the following formula corresponding to (90) is a tautology:

$$(91) \quad \phi \wedge [\phi \rightarrow \psi] \rightarrow \psi$$

Let us consider some other forms of valid inference. (92a) and (92b) together entail (92c), a pattern of inference called *modus tolens*.

- (92) a.  $\neg\psi$   
 b.  $\phi \rightarrow \psi$   
 c.  $\neg\phi$

Or, in short,

$$(93) \quad \neg\psi \wedge [\phi \rightarrow \psi] \Rightarrow \neg\phi$$

Again, the following formula corresponding to (93) is a tautology:

$$(94) \quad \neg\psi \wedge [\phi \rightarrow \psi] \rightarrow \neg\phi$$

Given a conditional formula, it entails its *contraposition*:

$$(95) \quad [\phi \rightarrow \psi] \Rightarrow [\neg\psi \rightarrow \neg\phi]$$

Note that the following are not valid inferences:

- (96) a.  $[\phi \rightarrow \psi] \not\Rightarrow [\psi \rightarrow \phi]$  (converse)  
 b.  $[\phi \rightarrow \psi] \not\Rightarrow [\neg\phi \rightarrow \neg\psi]$  (reverse)

Accordingly, in the following, a and b together don't entail c:

- (97) a.  $\psi$   
 b.  $\phi \rightarrow \psi$   
 c.  $\phi$
- (98) a.  $\neg\phi$   
 b.  $\phi \rightarrow \psi$   
 c.  $\neg\psi$

### 1.10.2 Implicature

Another kind of relationship between utterances is what is called *implicature* by Grice (1975), as seen in the following examples.

- (99) a. *Ken wa nomi-sugi-te kinoo itiniti sin-dei-ta.*  
 Ken TOP drink-too.much-GER yesterday whole.day die-RES-PST  
 ' (lit.) Ken was dead the whole day yesterday because he drank too much.'
- b. i. *Hotondo no gakusei ga zyugyoo ni syusseki-si-ta.*  
 most GER student NOM class DAT attend-do-PST  
 'Most students attended the class.'  
 ii. *Nanninka no gakusei wa zyugyoo ni syusseki-si-na-katta.*  
 some GER student TOP class DAT attend-do-NEG-PST  
 'Some students didn't attend the class.'
- c. i. *Sensei, watasi no soturon mite-kure-masi-ta ka?*  
 teacher my GEN thesis look.at-give.me-POL-PST Q  
 'Teacher, did you look at my thesis?'  
 ii. *Aa, kimi wa zi ga kirei-da ne.*  
 oh you TOP handwriting NOM beautiful-COP.NPST SP  
 'Oh, your handwriting is beautiful.'

- d. i. *Gosyumi wa?*  
 hobby TOP  
 ‘What is your hobby?’
- ii. *Hai, nihonbuyoo o sukosi.*  
 yes classical.Japanese.dance ACC a.little  
 ‘Yes, a little bit of classical Japanese dance.’
- cf. Kinsui and Imani (2000) for (99c, d)

These involve what Grice (1975) calls the *maxim of quality* ((99a); truthfulness), the *maxim of quantity* ((99b); informativeness), the *maxim of relation* ((99c); relevance), and the *maxim of manner* ((99d); clarity).

Even though (99a) is straightforwardly a false utterance, such an expression may be used to state figuratively how bad a state Ken was in. That is, the badness of Ken’s state is *implicated* by this sentence.

In (99b), the first sentence *implicates* the second sentence. Note that this *implicature* is cancellable, unlike entailments, as shown below:

- (100) *Hotondo no gakusei ga zyugyoo ni syusseki-si-ta.*  
 most GEN student NOM class DAT attend-do-PST  
 ‘Most students attended the class.’
- Zissai, minna syusseki-si-ta.*  
 in.fact all attend-do-PST  
 ‘In fact, all attended.’

Note that *hotondo no* ‘most’ is less informative than *minna* ‘all’. Using a less informative expression usually implicates that it is not the case that a more informative expression holds, since the maxim of quantity requires one to be as informative as possible.

The response in the second sentence in (99c) is a violation of the maxim of relation, since it is not relevant to the question. In this case, by uttering an apparently non-relevant response, the speaker intends to convey the implicature that the quality of the thesis, unlike its appearance, is not so good.

The maxim of manner requires one to be as clear as possible. Thus, the modesty expressed in the second sentence in (99d) is a violation of this maxim, but, in some cultures at least, it can be taken to implicate the good nature of the speaker. See Tomioka (this volume) for a more detailed discussion of implicatures.

## 1.10.3 Presupposition

There are relationships among sentences that differ from entailment. One is the relationship exemplified by the following sentences.

- (101) a.  $S_1$ : *Naomi wa Kinsei ga Kasei yori ooki-i koto*  
           Naomi TOP Venus NOM Mars than be.large-NPST COMP  
           *o sit-tei-ru.*  
           ACC come.to.know-RES-NPST  
           ‘Naomi knows that Venus is larger than Mars.’
- b.  $S_2$ : *Kinsei ga Kasei yori ooki-i.*  
           Venus NOM Mars than be.large-NPST  
           ‘Venus is larger than Mars.’
- c.  $S_1$  ‘implies’  $S_2$

Here, the truth of  $S_2$  is somehow implied by the truth of  $S_1$ , but  $S_1$  cannot be said to entail  $S_2$ , as the following implication also holds:

- (102) a.  $S_1'$ : *Naomi wa Kinsei ga Kasei yori ooki-i koto*  
           Naomi TOP Venus NOM Mars than be.large-NPST COMP  
           *o sir-ana-i.*  
           ACC come.to.know-NEG -NPST  
           ‘Naomi doesn’t know that Venus is larger than Mars.’
- b.  $S_2$ : *Kinsei ga Kasei yori ooki-i.*  
           Venus NOM Mars than be.large-NPST  
           ‘Venus is larger than Mars.’
- c.  $S_1'$  ‘implies’  $S_2$

Note that in the case of entailment, the validity of the first entailment below doesn’t guarantee the validity of the second entailment:

- (103) a.  $\phi \Rightarrow \psi$   
        b.  $\neg\phi \Rightarrow \psi$

Given that the relationship between  $S_1$  and  $S_2$  in (101) or  $S_1'$  and  $S_2$  in (102) is different from entailment,  $S_1$  is said in these cases to *presuppose*  $S_2$ , or  $S_2$  is said to be a *presupposition* of  $S_1$ . If one of the presuppositions fails, the sentence as a whole is perceived to be anomalous (cf. the anomaly of (69)).

There has been a large amount of research devoted to presupposition (see Kinuhata this volume). Here I will summarize briefly the background of such research, following Gunji (1981).

Frege (1892) argues, in his discussion of sense and reference, that an assertion containing a proper name ‘presupposes’ that the referent of the name exists, but that such meaning is not part of the sense of the sentence. He also notes that the negation of the sentence likewise ‘presupposes’ the existence of the referent of the proper name.

Strawson (1950) advocates the same view in his treatment of definite descriptions such as *the present King of France*, which Russell (1905) had argued entails the existence of the referent. According to Strawson, the existence is ‘implied’ rather than entailed, and a sentence containing a definite description is neither true nor false if the referent of the definite description doesn’t exist, instead of being false as Russell’s analysis predicts.

During the 1960s, many linguists adopted the concept of ‘presupposition’ as at least a descriptive device and applied it to a variety of linguistic phenomena (e.g., Horn (1969), Morgan (1969); see also Keenan (1971), and Boër and Lycan (1976) for extensive lists of presuppositional phenomena).

A property commonly observed across the diverse group of phenomena called ‘presuppositions’ is that if a sentence  $S_1$  ‘presupposes’ a sentence  $S_2$ , then so does its negation ‘not\_  $S_1$ .’ Based on this, a definition, indeed a class of definitions, has been proposed of presupposition, called the *semantic definition* (cf. Keenan 1971), which, ignoring minor differences, can be formulated as in (104):

- (104) A sentence  $S_1$  ‘presupposes’ a sentence  $S_2$  iff
- a.  $S_1$  entails  $S_2$ , and
  - b. not\_  $S_1$  entails  $S_2$ .

It becomes quickly apparent that definition (104) is not compatible with the principle of bivalence of sentential truth-value. From (104a) we have, based on *modus tollens*, that not\_  $S_2$  entails not\_  $S_1$ , and from (104b) we have that not\_  $S_2$  entails not\_not\_  $S_1$ , which is equivalent to  $S_1$  if we assume bivalence. Since not\_  $S_2$  entails both  $S_1$  and not\_  $S_1$ , not\_  $S_2$  must always be false, i.e.,  $S_2$  is always true. This is problematic unless one takes the extreme, and uninteresting, position that all ‘presuppositions’ are tautologies. One way to avoid this difficulty would be to allow  $S_1$  to take a third truth-value if  $S_2$  is false, and reformulate the definition as follows.

- (105) A sentence  $S_1$  ‘presupposes’ a sentence  $S_2$  iff if  $S_2$  is false, then  $S_1$  is neither true nor false.

The use of a three-valued logic is controversial since it leads to indefiniteness in the assignment of the truth-value of sentences involving standard logical constants, most

notoriously in the case of negation. Another difficulty of the semantic definition of ‘presupposition’ is that it cannot explain cases where a ‘presupposition’ does not arise, due to the existence of another utterance or a particular context. Note that there is no ‘presupposition’ that Naomi is tall in (106a) or (106b) as a whole.

- (106) a. *Naomi wa segataka-i koto o kookai-si-tei-na-i.*  
 Naomi TOP be.tall-NPST COMP ACC regret-do-STAT-NEG-NPST  
 ‘Naomi doesn’t regret being tall.’  
*Datte, Naomi wa segatakaku-na-i kara da.*  
 after.all Naomi TOP be.tall-NEG-NPST because COP  
 ‘Because, after all, Naomi isn’t tall.’
- b. *Naomi wa segatakaku-na-i.*  
 Naomi TOP be.tall-NEG-NPST  
 ‘Naomi isn’t tall.’  
*Dakara, Naomi wa segataka-i koto o*  
 so Naomi TOP be.tall-NPST COMP ACC  
*kookai-si-tei-na-i.*  
 regret-do-STAT-NEG-NPST  
 ‘So, Naomi doesn’t regret being tall.’

In (106a), the second sentence *cancels* the ‘presupposition’ created by the first sentence, while, in (106b), the first sentence establishes a context that prevents the ‘presupposition’ of the second sentence from arising, a phenomenon which I will call *abortion* of a ‘presupposition’ as opposed to *cancellation* of a presupposition as in (106a). Note that cancellation always works backward, that is, the later context abolishes the presupposition, while abortion always works forward.

The use of entailment in the definition of ‘presupposition’ is problematic, since if a ‘presupposition’ is a kind of entailment, as (104) says, there is no possibility of cancellation or abortion. Moreover, it is not the case that the first sentence of (106a) or the second sentence of (106b) has a third truth-value, as (105) dictates; they are straightforwardly true. Since cancellability is a feature that distinguishes presuppositions from other kinds of implications including entailment, we cannot adopt a semantic definition that blurs this important distinction. See Wilson (1975), Kempson (1975), Boër and Lycan (1976), and Gazdar (1979), among others, for further arguments against semantic definitions of ‘presupposition.’

Another way to avoid the difficulty of (104) would be to adopt a so-called *pragmatic definition* of ‘presupposition’ (cf. Keenan 1971; Karttunen 1973, 1974; Stalnaker 1974), though these are notorious for relying on sometimes vague or undefined notions such as ‘appropriateness,’ ‘sincerity,’ ‘felicity,’ etc. (cf. Gazdar (1979: 105)). A prototypical definition of pragmatic presupposition looks like (107), making appeal to the unspecified notion of <\*appropriate>:

- (107) Sentence  $S_1$  ‘presupposes’ sentence  $S_2$  iff it is <\*appropriate> to utter  $S_1$  only in a context where  $S_2$  is true.

Space does not allow me to discuss various elaborations along the line of (107) proposed by linguists and philosophers,<sup>15</sup> except to point out that, as Gazdar (1979) argues, the cancellation (and the abortion) of ‘presuppositions’ shown in (106) will still remain a mystery since both (106a) and (106b) are still <\*appropriate>, however you define this term. Definition (107) seems to be more appropriate to the cases of conventional implicature where cancellation is not allowed. Moreover, this kind of definition cannot capture certain communicative phenomena such as, for example, that (108) below can be used to implicate that Naomi is tall, even if that fact is not yet known to the hearer, i. e., is not yet in the context. This is a case of what I will call *accommodation*.

- (108) *Naomi wa segataka-i koto o kookai-si-tei-ru.*  
 Naomi TOP be.tall-NPST COMP ACC regret-do-STAT-NPST-NPST  
 ‘Naomi regrets being tall.’

In fact, (107) is sometimes counterintuitive. Consider the case where what is implied has already appeared in the context. In this case, what is implied is not presupposed, as can be seen in (109):

- (109) *Naomi wa segataka-i.*  
 Naomi TOP be.tall-NPST  
 ‘Naomi is tall.’  
*Demo, Naomi wa segataka-i koto o kookai-si-tei-na-i.*  
 but Naomi TOP be.tall-NPST COMP ACC regret-do-STAT-NEG-NPST  
 ‘But Naomi doesn’t regret being tall.’

Note that the second sentence doesn’t literally ‘presuppose’ that Naomi is tall, since that fact is already ‘known’ as an established piece of information and is not ‘implied’ in any sense. In this case, the ‘presupposition’ is discarded due to the existence of the established fact corresponding to the first sentence. Thus, pragmatic definitions like (107), which requires ‘presuppositions’ to be already in the context, cannot provide a satisfactory explanation for this kind of phenomenon, which I will call *absorption*.

<sup>15</sup> Cf. the works by the authors cited above. It should be emphasized that their elaborated definitions are far more complex and sophisticated than the ‘straw man’ (107) and may circumvent the difficulties particular to the crude form (107). In particular, if it is the speaker rather than the sentence that ‘presupposes’ something, as Stalnaker (1974) stresses, the ‘presupposition’ and the context may be coupled more strongly and may produce more satisfactory results. As a technical term, the *presupposition* here is something which is produced by the (utterance of) sentence in the interaction with the context.



See Gazdar (1979) for further discussion concerning the inadequacies of previous pragmatic definitions of ‘presupposition.’ In short, none of the previous definitions of the noun ‘presupposition’ or the verb to ‘presuppose’ seems satisfactory.

A more appropriate way of pragmatically defining *presupposition* must be based on the notion of discourse context, where the verb to *presuppose* is defined operationally, based on pragmatic interactions with the context. Such a definition would look like (110):

- (110) Sentence  $S_1$  *presupposes* sentence  $S_2$  iff the interpreting process of  $S_1$  adds to the context the proposition that corresponds to  $S_2$ , i.e., a *presupposition* corresponding to  $S_2$ .

To briefly illustrate the mechanisms underlying this definition, the processing of (108), for example, will introduce a piece of new information corresponding to the sentence *Naomi wa segataikai*. ‘Naomi is tall’ in the context of discourse, a case of *accommodation*, (108). This information is still cancellable. Thus, in the case of *cancellation*, such as in (106a), the processing of the second sentence deletes this new information. In the case of *abortion*, such as in (106b), on the other hand, since information contrary to the information that Naomi is tall is already in the context, this otherwise new information will be deleted from the context. Hence no presupposition is created; it is aborted before being born. In this way, noncancellable information overrides cancellable information. Finally, as for *absorption*, such as in (109), since the information that Naomi is tall already exists in the context as a noncancellable piece of information (the denotation of the first sentence), this information blocks the addition of the duplicate information which is cancellable, since it suffices to retain only the noncancellable information in the context. Thus, the mechanism sketched above explains all the properties of ‘presupposition’ observed so far – being accommodated (108), canceled (106a), aborted (106b), and absorbed (109). These various aspects of ‘presupposition’ are summarized in (111):

| (111) | Existing<br>Context | Later<br>Context | Example |        |
|-------|---------------------|------------------|---------|--------|
| a.    | Abortion            | –                | N/A     | (106b) |
| b.    | Absorption          | +                | N/A     | (109)  |
| c.    | Accommodation       | 0                | N/A     | (108)  |
| d.    | Cancellation        | N/A              | –       | (106a) |

where – indicates that the context contains contradictory information, + indicates that the context contains duplicate information, and 0 indicates that the context is neutral. Note that (111a)–(111c) involve an interaction between the newly introduced

information and the existing context. The new information will undergo one of these three processes. Only in the case of accommodation, (111c), can the new information survive, i. e., not become deleted, and remain in the form of cancellable information, which still has the chance of being deleted by a later process (111d). A satisfactory theory of ‘presupposition’ would have to be able to explain at least these four aspects of ‘presupposition’.

Presuppositions are different from entailments in that their truth is taken for granted in both affirmative and negative sentences. That is, (101b) is presupposed in the negation of (101a) also, as (102a), repeated here as (112a) below, shows. Moreover, the negative counterpart of (69) is still anomalous, as (112b) shows.

- (112) a. *Naomi ga Kinsei ga Kasei yori ooki-i koto o*  
 Naomi NOM Venus NOM Mars than be.large-NPST COMP ACC  
*sir-ana-i.*  
 come.to.know-NEG-NPST  
 ‘Naomi doesn’t know that Venus is larger than Mars.’
- b. *#Naomi ga Kasei ga Kinsei yori ooki-i koto o*  
 Naomi NOM Mars NOM Venus than be.large-NPST COMP ACC  
*sir-ana-i.*  
 come.to.know-NEG-NPST  
 ‘(lit.) Naomi doesn’t know that Mars is larger than Venus.’

This situation never arises in the case of entailment, as the following negative counterpart to (77) shows.

- (113) a. *Naomi ga Kinsei o mi-na-katta.*  
 Naomi NOM Venus ACC see-NEG-PST  
 ‘Naomi didn’t see Venus.’
- b. *Naomi wa wakusei o mi-ta.*  
 Naomi TOP planet ACC see-PST  
 ‘Naomi saw a planet.’
- c. *Naomi wa wakusei o mi-na-katta.*  
 Naomi TOP planet ACC see-NEG-PST  
 ‘Naomi didn’t see a planet.’

Sentences (113a) above (the negation of (77a)) entails neither (113b) (an entailment of (77a)) nor (113c) (the negation of (113b)).

Thus, the treatment of presuppositions must be quite different from that of entailment. Lack of space does not allow further discussion of the formal treatment of presupposition here, but see the references cited above for more detailed discussion.

## 2 Formal logical treatments of some select phenomena

In the following sections, I will briefly discuss formal-semantic approaches to some select phenomena from Japanese.

### 2.1 Two types of passive

Japanese is known to have two apparently different kinds of passive. One involves a transitive verb and usually has an active counterpart, where the subject and the object are interchanged. The other involves an intransitive verb or a verb phrase and no active counterpart exists. These are represented in (114a)–(114c) below:

- (114) a. *Ken ga Naomi ni home-rare-ta.*  
 Ken NOM Naomi DAT praise-PASS-PST  
 ‘Ken was praised by Naomi.’
- b. *Ken ga Naomi ni nak-are-ta.*  
 Ken NOM Naomi DAT cry-PASS-PST  
 ‘Ken was adversely affected by Naomi’s crying.’
- c. *Ken ga Naomi ni ootoo o home-rare-ta.*  
 Ken NOM Naomi DAT brother ACC praise-PASS-PST  
 ‘Ken was (adversely) affected by Naomi’s praising his brother.’

(114a) involves the transitive verb *home(ru)* ‘praise’, while (114b) involves the intransitive verb *nak(u)* ‘cry’. Note that (114c) involves an embedded verb phrase *otooto o home(ru)* ‘praise one’s brother’. Both (114b) and (114c) have a connotation of some kind of adversity, though the latter may convey a favorable meaning if Ken is happy with Naomi’s praising his brother.

In Gunji (1987), I called the former type of passive *transitive passive*, which has also been called ‘direct passive’ (Shibatani 1972, Howard and Niyekawa-Howard 1976), and the latter *intransitive passive*, which has been called ‘indirect passive’ (Shibatani 1972, Howard and Niyekawa-Howard 1976) or ‘adversity passive’ (Kuno 1973).

Semantically, it would be possible to assign different lexical meanings to the passive suffix *rare* in the following way:<sup>16</sup>

<sup>16</sup> In the following derivation, we assume type *e* for the subject and the object. If either or both were treated as a generalized quantifier of type  $\langle\langle e, t \rangle, t\rangle$ , quantifier raising as in (39) and (42) would be involved.

- (115) a. Transitive passive:  
 $\llbracket \text{rare} \rrbracket = \lambda Q . \lambda x . \lambda y . [Q(y)(x)]$
- b. Intransitive passive:  
 $\llbracket \text{rare} \rrbracket = \lambda P . \lambda x . \lambda y . [\text{AFFECTED}(y, P(x))]$

In (115a),  $Q$  is a two-place predicate that corresponds to the transitive verb (phrase) that attaches to the passive morpheme. Since  $x$  corresponds to the *ni*-marked object that precedes the transitive-passive sequence and appears as the first argument of  $Q$ , this is interpreted as the agent of the predicate corresponding to the transitive verb. On the other hand,  $y$  corresponds to the subject of the sentence and appears as the second argument of  $Q$ , making it the patient of the predicate. The following is an example (ignoring the tense):

- (116) a. *Ken ga Naomi ni home-rare-ta.*  
 Ken NOM Naomi DAT praise-PASS-PST  
 ‘Ken was praised by Naomi.’
- b.  $\llbracket \text{rare} \rrbracket = \lambda Q . \lambda x . \lambda y . [Q(y)(x)]$
- c.  $\llbracket \text{home} \rrbracket = P_r$
- d.  $\llbracket \text{home-rare} \rrbracket = \lambda Q . \lambda x . \lambda y . [Q(y)(x)](P_r)$   
 $= \lambda x . \lambda y . [P_r(y)(x)]$
- e.  $\llbracket \text{Naomi-ni home-rare} \rrbracket = \lambda x . \lambda y . [P_r(y)(x)](n)$   
 $= \lambda y . [P_r(y)(n)]$
- f.  $\llbracket \text{Ken-ga Naomi-ni home-rare} \rrbracket = \lambda y . [P_r(y)(n)](k)$   
 $= P_r(k)(n)$

The final formula naturally arrived at in this way is the same as that corresponding to the semantic interpretation of *Naomi ga Ken o home-ta* ‘Naomi praised Ken.’

In (115b),  $P$  is a one-place predicate that corresponds to the intransitive verb (phrase) that attaches to the passive morpheme. Since  $x$  corresponds to the *ni*-marked object that precedes the intransitive-passive verb complex and appears as the argument of  $P$ , it is interpreted as the agent (or whatever semantic role it has as to  $P$ ) of the predicate corresponding to the intransitive verb. On the other hand,  $y$  corresponds to the subject of the sentence and appears as the first argument of  $\text{AFFECTED}$ , positioning it in a situation where  $y$  is affected in some way by the realization of  $P(x)$ . Here is an example:

- (117) a. *Ken ga Naomi ni nak-are-ta.*  
 Ken NOM Naomi DAT cry-PASS-PAST  
 ‘Ken was adversely affected by Naomi’s crying.’

- b.  $\llbracket \text{rare} \rrbracket = \lambda P . \lambda x . \lambda y . [\text{AFFECTED}(y, P(x))]$
- c.  $\llbracket \text{nak} \rrbracket = Cr$
- d.  $\llbracket \text{nak-are} \rrbracket = \lambda P . \lambda x . \lambda y . [\text{AFFECTED}(y, P(x))](Cr)$   
 $= \lambda x . \lambda y . [\text{AFFECTED}(y, Cr(x))]$
- e.  $\llbracket \text{Naomi-ni nak-are} \rrbracket = \lambda x . \lambda y . [\text{AFFECTED}(y, Cr(x))](n)$   
 $= \lambda y . [\text{AFFECTED}(y, Cr(n))]$
- f.  $\llbracket \text{Ken-ga Naomi-ni nak-are} \rrbracket = \lambda y . [\text{AFFECTED}(y, Cr(n))](k)$   
 $= \text{AFFECTED}(k, Cr(n))$

This treatment of intransitive *rare* in terms of the predicate AFFECTED, is, in a way, a lexical-decomposition approach. It can be applied to other predicates involving some kind of affectedness. For example, in Imaizumi and Gunji (2002), certain meanings of the verbs *das* ‘put out’ and *de* ‘go out’ are represented using AFFECTED. Here are some examples:

- (118) a. *Ken ga te kara ti o dasi-tei-ru.*  
 Ken NOM hand ABL blood ACC emit-PROG-NPST  
 ‘Ken is bleeding from his hand.’
- b.  $\llbracket \text{das} \rrbracket = \lambda x . \lambda y . \lambda z . [\text{AFFECTED}(z, \text{OUT}(x, y))]$
  - c.  $\llbracket \text{Ken-ga te-kara ti-o dasiteiru} \rrbracket = \text{AFFECTED}(k, \text{OUT}(b, h))$
- (119) a. *Te kara ti ga de-tei-ru.*  
 hand ABL blood NOM emerge-PROG-NPST  
 ‘Blood is coming out of his hand.’
- b.  $\llbracket \text{de} \rrbracket = \lambda x . \lambda y . [\text{AFFECTED}(z, \text{OUT}(x, y))]$
  - c.  $\llbracket \text{Te kara ti-ga deteiru} \rrbracket = \text{AFFECTED}(z, \text{OUT}(b, h))$

where  $\text{OUT}(x, y)$  is an abstract predicate intuitively meaning  $x$  is coming out of  $y$ . For simplicity,  $b$  and  $h$  correspond to some amount of blood and the affectee’s hand, respectively. In (119b), what corresponds to the affectee is a free variable ( $z$ ) whose denotation is pragmatically determined.

See Imaizumi and Gunji (2002) for more detailed discussion on the use of AFFECTED and the lexical decomposition approach.

## 2.2 So-called floating quantifiers

Quantifiers in Japanese typically appear after the noun with which they are associated and its particle, as illustrated in (120), and are commonly referred to in such cases as “floating quantifiers.”

- (120)      *Gakusei ga ringo o 3-ko tabe-ta.*  
               student NOM apple ACC 3-CLF eat-PST  
               ‘A student/students ate three apples.’

In Gunji (2005), I proposed an analysis of this construction type based on the idea of *minimal recursion semantics* (MRS) (Copestake et al. 2006). MRS is closely related to Davidson’s (1967) conception of event semantics. A comparison of the semantic structures proposed in the two frameworks can be seen in (121): (121b) in a Davidsonian semantic representation and (121c) in MRS.

- (121) a. *Gakusei ga ringo o tabe-ta.*  
               student NOM apple ACC eat-PST  
               ‘A student/students ate an apple/apples’  
       b.  $\exists e \exists x \exists y [\text{eat}(e, x, y) \wedge \text{student}(x) \wedge \text{apple}(y)]$   
       c.  $h_1: \text{student}(x), h_2: \text{apple}(y), h_3: \text{eat}(x, y)$

where  $e$  is an event variable and  $x$  and  $y$  are individual variables.

In MRS, each predication is called an *elementary predication* (EP). Instead of using event variables as in the Davidsonian representation, each EP has an index called *handle* that can be used to distinguish a given EP from other EPs. Unbound variables such as  $x$  and  $y$  above are understood to be existentially quantified, and the comma-separated EPs are understood to be conjuncts of a conjunction.

The use of handles makes it possible to have a flatter representation when quantification is involved. Take a sentence that involves a (so-called floating) quantifier such as *3-ko* ‘three-CLF’:

- (120)      *Gakusei ga ringo o 3-ko tabe-ta.*  
               student NOM apple ACC 3-CLF eat-PST  
               ‘A student/students ate three apples.’

In MRS, (120) is given the following semantic representation:

- (122)       $h_1: \text{student}(x), h_2: \text{apple}(y), h_3: \text{eat}(x, y), h_4: \text{measure}(h_2, \text{ko}, 3)$

The above representation essentially expresses the following:

- (123) a. There is an eating event labeled as  $h_3$ .  
 b. The event includes two arguments  $x$  and  $y$ .  
 c. The first argument  $x$  is a student/a set of students.  
 d. The second argument  $y$  is an apple/a set of apples.  
 e. The second argument is *measured* with respect to the dimension ‘ko’ as 3.

This corresponds to the generalized quantifier notation (124):

- (124) THREE(**apple**,  $\lambda y . \exists x [\textbf{student}(x) \wedge \textbf{eat}(y)(x)]$ )

(122) is ‘flatter’ than (124) in that the counterpart of the generalized quantifier (**measure**) takes only a handle (which is assumed to be of type  $e$ ), while ‘THREE’ in (124) takes two properties (of type  $\langle e, t \rangle$ ) as arguments.

MRS also makes it possible to express ambiguous expressions in a more concise fashion. In the following example, (125) is ambiguous between the interpretation ‘There are three apples that the student(s) didn’t eat’ and ‘It is not the case that the student(s) ate three apples’.

- (125) *Gakusei ga ringo o 3-ko tabe-na-katta.*  
 student NOM apple ACC 3-CLF eat-NEG-PST  
 ‘The student(s) didn’t eat three apples.’

- (126) a. THREE(**apple**,  $\lambda y . \neg \exists x [\textbf{student}(x) \wedge \textbf{eat}(y)(x)]$ )  
 ‘There were three apples that the student(s) didn’t eat.’  
 b.  $\neg$ THREE(**apple**,  $\lambda y . \exists x [\textbf{student}(x) \wedge \textbf{eat}(y)(x)]$ )  
 ‘It is not the case that the student(s) ate three apples.’

In the MRS representation, the sentence is expressed in the following way:

- (127)  $h_1: \textbf{student}(x), h_2: \textbf{apple}(y), h_3: \textbf{eat}(x, y), h_4: \textbf{measure}(h_2, \text{ko}, 3),$   
 $h_4: \textbf{not}(h_3)$

Note that the handle  $h_8$  is not associated with any EP. If we make  $h_8 = h_3$ , then we have the interpretation corresponding to (126a), where 3-ko has a wide scope. On the other hand, if we make  $h_8 = h_4$  we have the interpretation corresponding to (126b), where the negation has a wide scope.

Graphically, these scopal relations can be represented in the following trees:

- (128) a. 
$$\begin{array}{c} \text{measure}(3) \\ \swarrow \quad \searrow \\ \text{student}(x) \quad \text{not} \\ \quad \quad \quad \downarrow \\ \quad \quad \text{apple}(y), \text{eat}(x,y) \end{array}$$
- b. 
$$\begin{array}{c} \text{not} \\ \downarrow \\ \text{measure}(3) \\ \swarrow \quad \searrow \\ \text{student}(x) \quad \text{apple}(y), \text{eat}(x,y) \end{array}$$

The predicate **measure** gives the quantity of incremental themes (Dowty 1991). As such it involves only the object of a transitive verb or the subject of an unaccusative verb. There are, however, cases where a quantifier is associated with the subject of a non-unaccusative verb, such as a transitive verb:

- (129) *Gakusei ga 5-nin ringo o tabe-ta.*  
 student NOM 5-CLF apple ACC eat-PST  
 ‘Five students ate an apple/apples.’

Since *gakusei ga* is the subject of the transitive verb *tabe* ‘eat’, it cannot be simply measured by *5-nin*. As we have argued in Gunji and Hasida (1998), a quantifier phrase like *5-nin* in such a sentence can be treated as *coerced* into taking an appropriate semantics.

Assuming that such coerced quantifiers are to be treated in their semantics as a special case of quantifiers in general, I propose representing the semantics of such coerced expressions as follows:

- (130)  $h_1: \text{student}(x), h_2: \text{apple}(y), h_3: \text{eat}(x, y), h_4: \text{quant}(x, h_1, h_3, \text{nin}, 5)$

where the EP **quant** takes five arguments: bound variable, restriction, scope, dimension, and numeral. Intuitively, this is a quantification over the external argument of the modified verb. The restriction is the handle of the external argument and the scope is the handle of the verb. So, the above expresses that there are five students (counted with *nin*) who eat an apple/apples.

This is equivalent to the following generalized quantifier notation:

- (131)  $5\text{NIN}(\text{student}, \lambda x . \exists y [\text{apple}(y) \wedge \text{eat}(x, y)])$



Since **measure** and **quant** interact in their scope, a sentence such as the following is ambiguous in meaning:

- (132) *Gakusei ga 5-nin ringo o 3-ko tabe-ta.*  
 student NOM 5-CLF apple ACC 3-CLF eat-PST  
 ‘Five students ate three apples.’

In one of the interpretations, *5-nin* has a wide scope (what we called a *distributive reading* in Gunji and Hasida (1998: Figure 3.3)), with an interpretation corresponding intuitively to ‘Each of the five students ate three apples.’ In the other interpretation, there is no scopal relation (what we called a *cumulative reading* in Gunji and Hasida (1998: Figure 3.2)), corresponding in interpretation to ‘A total of five students ate a total of three apples.’

In the following MRS representation, the scope relations are not resolved and  $h_8$  has not yet been equated to any handle.

- (133)  $h_1$ : **student**( $x$ ),  $h_2$ : **apple**( $y$ ),  $h_3$ : **eat**( $x$ ,  $y$ ),  $h_4$ : **quant**( $x$ ,  $h_1$ ,  $h_8$ , *nin*, 5),  
 $h_5$ : **measure**( $h_3$ , *ko*, 3)

Letting  $h_8 = h_5$ , we have the interpretation where *5 nin* (quantification) has a wide scope, as shown below.

- (134) *Distributive Reading*  
 a.  $h_1$ : **student**( $x$ ),  $h_2$ : **apple**( $y$ ),  $h_3$ : **eat**( $x$ ,  $y$ ),  
 $h_4$ : **quant**( $x$ ,  $h_1$ ,  $h_5$ , *nin*, 5),  $h_5$ : **measure**( $h_3$ , *ko*, 3)  
 b.
- quant**( $x$ , 5)

student( $x$ )

measure(3)

|

apple( $y$ ), eat( $x$ ,  $y$ )

In the above interpretation, quantification has a wide scope over measurement: there are five students each of whom ate three apples. Thus, there are total of three students and (a maximum of) 15 apples.

On the other hand, letting  $h_8 = h_3$  results in a cumulative reading. This interpretation involves total of three apples and five students. In this interpretation, the quantification and measurement don't have a scope relationship and there can be no tree representation with a single parent.

(135) *Cumulative Reading*

- a.  $h_1$ : **student**( $x$ ),  $h_2$ : **apple**( $y$ ),  $h_3$ : **eat**( $x, y$ ),  $h_4$ : **quant**( $x, h_1, h_3, \text{nin}, 3$ ),  
 $h_5$ : **measure**( $h_3, \text{ko}, 2$ )
- b.  $\text{quant}(x, 5)$   $\text{measure}(3)$   
  
**student**( $x$ ) **apple**( $y$ ), **eat**( $x, y$ )

See Gunji and Hasida (1998) and Gunji (2005) for a more detailed discussion.

## 2.3 NPI *sika*

The Japanese particle *sika* ‘only’ is known to be able to appear in so-called *negative polarity environments* and is commonly referred to as a *negative polarity item* (NPI).

- (136) a. *Naomi sika watasi ni sansei-si-na-i.*  
 Naomi only I DAT agree-do-NEG-NPST  
 ‘Only Naomi agrees with me.’
- b. \**Naomi sika watasi ni sansei-si-tei-ru.*  
 Naomi only I DAT agree-do-STAT-NPST
- c. *Naomi wa watasi ni sika sansei-si-na-i.*  
 Naomi TOP I DAT only agree-do-NEG-NPST  
 ‘Naomi agrees only with me.’
- d. \**Naomi wa watasi ni sika sansei-si-tei-ru.*  
 Naomi TOP I DAT only agree-do-STAT-NPST

Moreover, if *sika* is used more than once in a sentence, its acceptability decreases.

- (137) ?*Naomi sika watasi ni sika sansei-si-na-i.*  
 Naomi only I DAT only agree-do-NEG-NPST.  
 ‘Only Naomi agrees only with me.’

In the following, I will propose an account of the lexical meaning of *sika* that correctly explains these behaviors based on the discussion presented in Gunji (2008).

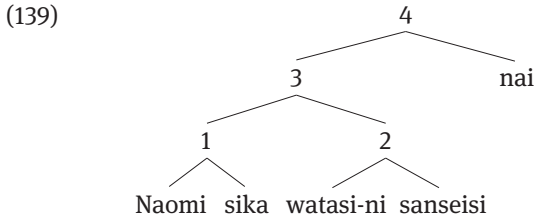
### 2.3.1 Subject position

First, the *sika* that appears in subject position, as in (136a), is given a lexical meaning as follows.

$$(138) \quad \llbracket \mathbf{sika} \rrbracket = \lambda p . \lambda P . \forall x [\lambda v . [x \neq v] \rightarrow P(x)]$$

If there is no structural restriction on the position of the phrase that includes *sika* or that of the negative morpheme *nai* in (136a), we have at least two possible structures.

First, if the negative morpheme takes wide scope over the *sika*-phrase, we have the following schematic structure:

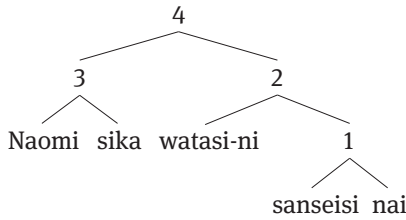


- 1:  $\llbracket \mathbf{Naomi} \rrbracket = \lambda P . [P(n)]$   
 $\llbracket \mathbf{sika} \rrbracket = \lambda p . \lambda P . \forall x [\lambda v . [x \neq v] \rightarrow P(x)]$   
 $\llbracket [_1 \mathbf{Naomi sika}] \rrbracket = \llbracket \mathbf{sika} \rrbracket (\llbracket \mathbf{Naomi} \rrbracket)$   
 $= \lambda p . \lambda P . \forall x [\lambda v . [x \neq v] \rightarrow P(x)] (\lambda P . [P(n)])$   
 $= \lambda P . \forall x [x \neq n \rightarrow P(x)]$
- 2:  $\llbracket \mathbf{watasi-ni} \rrbracket = \lambda Q . \lambda x . [Q(s)(x)]$   
 $\llbracket \mathbf{sanseisi} \rrbracket = A_g$   
 $\llbracket [_2 \mathbf{watasi-ni sanseisi}] \rrbracket = \llbracket \mathbf{watasi-ni} \rrbracket (\llbracket \mathbf{sanseisi} \rrbracket)$   
 $= \lambda Q . \lambda x . [Q(s)(x)] (A_g)$   
 $= \lambda x . [A_g(s)(x)]$
- 3:  $\llbracket [_3 [_1 \mathbf{Naomi sika}] [_2 \mathbf{watasi-ni sanseisi}]] \rrbracket$   
 $= \llbracket [_1 \mathbf{Naomi sika}] \rrbracket (\llbracket [_2 \mathbf{watasi-ni sanseisi}] \rrbracket)$   
 $= \lambda P . \forall x [x \neq n \rightarrow P(x)] (\lambda x . [A_g(s)(x)])$   
 $= \forall x [x \neq n \rightarrow A_g(s)(x)]$
- 4:  $\llbracket \mathbf{nai} \rrbracket = \lambda p . [\neg p]$   
 $\llbracket [_4 [_3 \mathbf{Naomi sika watasi-ni sanseisi}] \mathbf{nai}] \rrbracket$   
 $= \llbracket \mathbf{nai} \rrbracket (\llbracket [_3 \mathbf{Naomi sika watasi-ni sanseisi}] \rrbracket)$   
 $= \lambda p . [\neg p] (\forall x [x \neq n \rightarrow A_g(s)(x)])$   
 $= \neg \forall x [x \neq n \rightarrow A_g(s)(x)]$

The final formula expresses that it is not the case that everyone other than Naomi agrees with the speaker, which is not adequate for (136a).

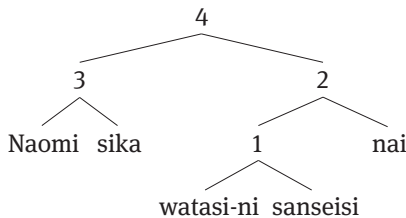
On the other hand, if the *sika*-phrase takes wide scope over the negative morpheme, we have one of the following structures depending on whether the transitive verb is negated or the verb phrase is negated. The final formulae are, however, the same.<sup>17</sup>

(140) a.



- 1:  $\llbracket \mathbf{nai} \rrbracket = \lambda Q . \lambda y . \lambda x . [\neg Q(y)(x)]$   
 $\llbracket \mathbf{sanseisi} \rrbracket = A_g$   
 $\llbracket [{}_1 \mathbf{sanseisi nai}] \rrbracket = \llbracket \mathbf{nai} \rrbracket (\llbracket \mathbf{sanseisi} \rrbracket)$   
 $= \lambda Q . \lambda y . \lambda x . [\neg Q(y)(x)](A_g)$   
 $= \lambda y . \lambda x . [\neg A_g(y)(x)]$
- 2:  $\llbracket \mathbf{watasi-ni} \rrbracket = \lambda Q . \lambda x . [Q(s)(x)]$   
 $\llbracket [{}_2 \mathbf{watasi-ni sanseisi nai}] \rrbracket = \llbracket \mathbf{watasi-ni} \rrbracket (\llbracket [{}_1 \mathbf{sanseisi nai}] \rrbracket)$   
 $= \lambda Q . \lambda x . [Q(s)(x)](\lambda y . \lambda x . [\neg A_g(y)(x)])$   
 $= \lambda x . [\neg A_g(s)(x)]$
- 3:  $\llbracket [{}_3 \mathbf{Naomi sika}] \rrbracket = \lambda P . \forall x [x \neq n \rightarrow P(x)]$  (from (139, 1:))
- 4:  $\llbracket [{}_4 [{}_3 \mathbf{Naomi sika}] [{}_2 \mathbf{watasi-ni sanseisi nai}] \rrbracket$   
 $= \llbracket [{}_3 \mathbf{Naomi sika}] \rrbracket (\llbracket [{}_2 \mathbf{watasi-ni sanseisi nai}] \rrbracket)$   
 $= \lambda P . \forall x [x \neq n \rightarrow P(x)](\lambda x . [\neg A_g(s)(x)])$   
 $= \forall x [x \neq n \rightarrow \neg A_g(s)(x)]$

b.



<sup>17</sup> In the following, unlike the propositional negation as in Step 4 of (139) above, I will assume a negation of type  $\langle\langle e, \langle e, t \rangle \rangle, \langle e, \langle e, t \rangle \rangle\rangle$  (a negation of predicate of type transitive verb) for (140a) and that of type  $\langle\langle e, t \rangle, \langle e, t \rangle\rangle$  (a negation of predicate of type intransitive verb) for (140b), whose definitions are given in Step 1 of (140a) and Step 2 of (140b), respectively.

- 1:  $\llbracket [{}_1 \text{ watasi-ni sanseisi}] \rrbracket = \lambda x . [A_g(s)(x)]$  (from (139, 2:))
- 2:  $\llbracket \text{nai} \rrbracket = \lambda P . \lambda x . [\neg P(x)]$   
 $\llbracket [{}_2 [{}_1 \text{ watasi-ni sanseisi}] \text{ nai}] \rrbracket$   
 $= \llbracket \text{nai} \rrbracket (\llbracket [{}_1 \text{ watasi-ni sanseisi}] \rrbracket)$   
 $= \lambda P . \lambda x . [\neg P(x)] (\lambda x . [A_g(s)(x)])$   
 $= \lambda x . [\neg A_g(s)(x)]$
- 3:  $\llbracket [{}_3 \text{ Naomi sika}] \rrbracket = \lambda P . \forall x [x \neq n \rightarrow P(x)]$  (from (139, 1:))
- 4:  $\llbracket [{}_4 [{}_3 \text{ Naomi sika}] [{}_2 \text{ watasi-ni sanseisi nai}] \rrbracket$   
 $= \llbracket [{}_3 \text{ Naomi sika}] \rrbracket (\llbracket [{}_2 \text{ watasi-ni sanseisi nai}] \rrbracket)$   
 $= \lambda P . \forall x [x \neq n \rightarrow P(x)] (\lambda x . [\neg A_g(s)(x)])$   
 $= \forall x [x \neq n \rightarrow \neg A_g(s)(x)]$

Here, both structures correspond to the interpretation that everyone other than Naomi doesn't agree with the speaker, which is the appropriate interpretation.

Thus, we assume the following constraint on the *sika*-phrase:

- (141) A phrase that includes *sika* must take wide scope over negation.

Since the above constraint requires the existence of negation over which the *sika*-phrase takes wide scope, (136b, d), in which *sika* appears in an affirmative sentence is predicted to be ungrammatical:

- (136) b. \**Naomi sika watasi ni sansei-si-tei-ru.*  
 d. \**Naomi wa watasi ni sika sansei-si-tei-ru.*

### 2.3.2 Object position

We assume the following lexical meaning for *sika* appearing in object position.<sup>18</sup>

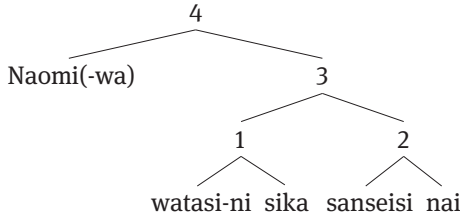
- (142)  $\llbracket \text{sika} \rrbracket = \lambda Q . \lambda Q . \lambda x . \forall y [Q(\lambda v . \lambda u . [u \neq v])(y) \rightarrow Q(y)(x)]$

Again, the *sika*-phrase is assumed to take wide scope over negation.

- (136) c. *Naomi wa watasi ni sika sansei-si-na-i.*

<sup>18</sup>  $Q$  is a variable of type generalized quantifier that takes the denotation of a transitive verb (phrase). The lexical meaning of this *sika* is, intuitively speaking, that individuals other than the one that corresponds to  $Q$  have the property expressed by  $Q$ .

(143)

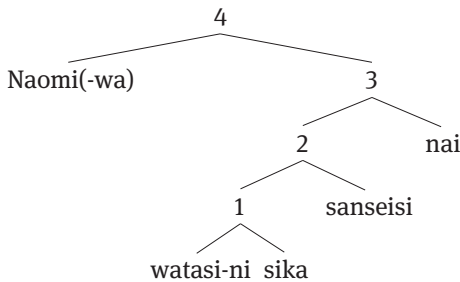


- 1:  $\llbracket \text{watasi ni} \rrbracket = \lambda Q . \lambda x . [Q(s)(x)]$   
 $\llbracket \text{sika} \rrbracket = \lambda Q . \lambda Q . \lambda x . \forall y [Q(\lambda v . \lambda u . [u \neq v])(y) \rightarrow Q(y)(x)]$   
 $\llbracket [{}_1 \text{ watasi-ni sika}] \rrbracket = \llbracket \text{sika} \rrbracket(\llbracket \text{watasi-ni} \rrbracket)$   
 $= \lambda Q . \lambda Q . \lambda x . \forall y [Q(\lambda v . \lambda u . [u \neq v])(y) \rightarrow Q(y)(x)](\lambda Q . \lambda x . [Q(s)(x)])$   
 $= \lambda Q . \lambda x . \forall y [y \neq s \rightarrow Q(y)(x)]$
- 2:  $\llbracket [{}_2 \text{ sanseisi nai}] \rrbracket = \lambda y . \lambda x . [\neg A_g(y)(x)]$  (from (140a, 1:))
- 3:  $\llbracket [{}_3 [{}_1 \text{ watasi-ni sika}] [{}_2 \text{ sanseisi nai}]] \rrbracket$   
 $= \llbracket [{}_1 \text{ watasi-ni sika}] \rrbracket(\llbracket [{}_2 \text{ sanseisi nai}] \rrbracket)$   
 $= \lambda Q . \lambda x . \forall y [y \neq s \rightarrow Q(y)(x)](\lambda y . \lambda x . [\neg A_g(y)(x)])$   
 $= \lambda x . \forall y [y \neq s \rightarrow \neg A_g(y)(x)]$
- 4:  $\llbracket \text{Naomi(-wa)} \rrbracket = \lambda P . [P(n)]$   
 $\llbracket [{}_4 \text{ Naomi(-wa)}] [{}_3 \text{ watasi-ni sika sanseisi nai}] \rrbracket$   
 $= \llbracket \text{Naomi(-wa)} \rrbracket(\llbracket [{}_3 \text{ watasi-ni sika sanseisi nai}] \rrbracket)$   
 $= \lambda P . [P(n)](\lambda x . \forall y [y \neq s \rightarrow \neg A_g(y)(x)])$   
 $= \forall y [y \neq s \rightarrow \neg A_g(y)(n)]$

This corresponds to the interpretation that Naomi doesn't agree with anyone other than the speaker, which is the appropriate interpretation.

If we assume that the *sika*-phrase could take narrow scope over negation, we would have the following interpretation.

(144)



- 1:  $\llbracket [{}_1 \text{ watasi-ni sika}] \rrbracket = \lambda Q . \lambda x . \forall y [y \neq s \rightarrow Q(y)(x)]$  (from (143, 1:))
- 2:  $\llbracket \text{sanseisi} \rrbracket = A_g$   
 $\llbracket [{}_2 \text{ watasi-ni sika}] \text{ sanseisi} \rrbracket$   
 $= \llbracket [{}_1 \text{ watasi-ni sika}] \rrbracket (\llbracket \text{sanseisi} \rrbracket)$   
 $= \lambda Q . \lambda x . \forall y [y \neq s \rightarrow Q(y)(x)] (A_g)$   
 $= \lambda x . \forall y [y \neq s \rightarrow A_g(y)(x)]$
- 3:  $\llbracket \text{nai} \rrbracket = \lambda P . \lambda x . [\neg P(x)]$   
 $\llbracket [{}_3 \text{ watasi-ni sika sanseisi}] \text{ nai} \rrbracket$   
 $= \llbracket \text{nai} \rrbracket (\llbracket [{}_2 \text{ watasi-ni sika sanseisi}] \rrbracket)$   
 $= \lambda P . \lambda x . [\neg P(x)] (\lambda x . \forall y [y \neq s \rightarrow A_g(y)(x)])$   
 $= \lambda x . \neg \forall y [y \neq s \rightarrow A_g(y)(x)]$
- 4:  $\llbracket \text{Naomi}(-\text{wa}) \rrbracket = \lambda P . [P(n)]$   
 $\llbracket [{}_4 \text{ Naomi}(-\text{wa}) [{}_3 \text{ watasi-ni sika sanseisi nai}] \rrbracket$   
 $= \llbracket \text{Naomi}(-\text{wa}) \rrbracket (\llbracket [{}_3 \text{ watasi-ni sika sanseisi nai}] \rrbracket)$   
 $= \lambda P . [P(n)] (\lambda x . \neg \forall y [y \neq s \rightarrow A_g(y)(x)])$   
 $= \neg \forall y [y \neq s \rightarrow A_g(y)(n)]$

This corresponds to the interpretation that it is not the case that Naomi agrees with everyone other than the speaker, or equivalently, that there is someone besides the speaker who Naomi doesn't agree with. This is not how we interpret (136c).

### 2.3.3 Presupposition of *sika*

Note that in (138) and (142), there is no term like  $P(x)$  or  $Q(y)(x)$  (meaning that the referent of the phrase preceding *sika* has the property  $P$  or  $Q$ ) as a conjunct in the formula. In fact, these terms are not part of the truth condition of the sentence involving *sika*.

Take (138) as an example. The meaning of (140a) and (140b) is (145a), not (145b).

- (145) a.  $\forall x [x \neq n \rightarrow \neg A_g(s)(x)]$   
 b.  $\forall x [x \neq n \rightarrow \neg A_g(s)(x)] \wedge A_g(s)(n)$

That is, the meaning of the sentence *Naomi sika watasi ni sanseisi-nai* 'Only Naomi agrees with me' doesn't include a conjunct that corresponds to 'Naomi agrees with me.'

Contrary to our intuitive understanding, 'Only Naomi agrees with me' doesn't entail 'Naomi agrees with me.' This is not a logical entailment but a presupposition or a Gricean implicature (Grice 1975). This line of argument has been given for English *only* by Horn (1969, 1996) and for Japanese *sika* by Kataoka (2006), among others.

For example, consider the following question and answer pair. In order to give a negative answer, it is necessary to negate the part that corresponds to (145a) (or the first part of (145b)). Negating the second part of (145b) is not adequate. This is not what we expect if the semantics is given as a conjunction as in (145b).<sup>19</sup>

- (146) a. *Naomi sika ko-na-i no?*  
           Naomi only come-NEG-NPST Q  
           ‘Will only Naomi come?’
- b. – *Iya, Ken mo ku-ru.*  
           no Ken also come-NPST  
           ‘No, Ken will also come.’
- c. – *?Iya, Naomi wa ko-na-i.*  
           no Naomi TOP come-NEG-NPST  
           ‘No, Naomi will not come.’

In summary, we have the following scheme:

- (147) Subject-position *sika*  
       a.  $P: \lambda P. \lambda P. [\mathcal{P}(\lambda x. P(x))]$   
       b.  $A: \lambda P. \lambda P. \forall x [\mathcal{P}(\lambda v. [x \neq v]) \rightarrow P(x)]$
- (148) Object-position *sika*  
       a.  $P: \lambda Q. \lambda Q. \lambda x. [\mathcal{Q}(\lambda y. \lambda u. Q(y)(u))(x)]$   
       b.  $A: \lambda Q. \lambda Q. \lambda x. \forall y [\mathcal{Q}(\lambda v. \lambda u. [u \neq v])(y) \rightarrow Q(y)(x)]$

### 2.3.4 Two occurrences of *sika*

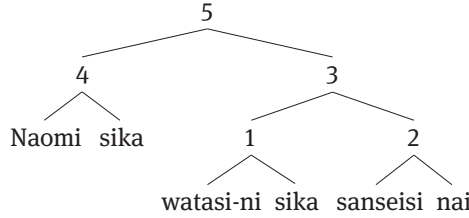
Finally, let us consider sentences with two occurrences of *sika*:

- (137) *?Naomi sika watasi ni sika sansei-si-na-i.*  
       Naomi only I DAT only agree-do-NEG-NPST  
       ‘Only Naomi agrees only with me.’

<sup>19</sup> The marginal acceptability of (146c) may be due to the cancellability of the presupposition (or implicature) that ‘Naomi will come.’



(149)



- 1:  $\llbracket [{}_1 \textbf{watasi-ni sika}] \rrbracket = \lambda Q . \lambda x . \forall y [y \neq s \rightarrow Q(y)(x)]$  (from (143, 1:))
- 2:  $\llbracket [{}_2 \textbf{sanseisi nai}] \rrbracket = \lambda y . \lambda x . [\neg A_g(y)(x)]$  (from (143, 2:))
- 3:  $\llbracket [{}_3 [{}_1 \textbf{watasi-ni sika}] [{}_2 \textbf{sanseisi nai}]] \rrbracket$   
 $= \lambda x . \forall y [y \neq s \rightarrow \neg A_g(y)(x)]$  (from (143, 3:))
- 4:  $\llbracket [{}_4 \textbf{Naomi sika}] \rrbracket = \lambda P . \forall x [x \neq n \rightarrow P(x)]$  (from (139, 1:))
- 5:  $\llbracket [{}_5 [{}_4 \textbf{Naomi sika}] [{}_3 \textbf{watasi-ni sika sanseisi nai}]] \rrbracket$   
 $= \llbracket [{}_4 \textbf{Naomi sika}] \rrbracket (\llbracket [{}_3 \textbf{watasi-ni sika sanseisi nai}] \rrbracket)$   
 $= \lambda P . \forall x [x \neq n \rightarrow P(x)] (\lambda x . \forall y [y \neq s \rightarrow \neg A_g(y)(x)])$   
 $= \forall x [x \neq n \rightarrow \forall y [y \neq s \rightarrow \neg A_g(y)(x)]]$

This corresponds to the interpretation that everyone other than Naomi doesn't agree with everyone other than the speaker, which may be possible if (137) is acceptable.

See Gunji (2008) for more detailed discussion, in particular regarding the interaction of *sika* with other NPIs such as *daremo* 'whoever'.

## 2.4 Ga and wa

In this section I present in outline a treatment of aspects of the meaning of the particles *ga* and *wa*, in terms of the logical notions of quantification, on the one hand, and presupposition/assertion contrast, on the other, based on proposals originally made in Gunji (2012).

First, as for the *ga* of 'exhaustive listing' (cf. Kuno 1973), in addition to a meaning that is straightforwardly asserted, we assume the presence of a presupposition to the effect of 'only'. For example, we assume the following presupposition and assertion for the sentence in (150a):

- (150) a. *Naomi ga kasiko-i.* (exhaustive listing)  
           Naomi NOM be.smart-NPST  
           'Naomi (and only Naomi) is smart.'
- b. P:  $\forall x [S_m(x) \rightarrow x = n]$   
     A:  $S_m(n)$

where  $S_m$  is a one-place predicate corresponding to *kasikoi* ‘be smart’.

The presupposition part states that only Naomi is smart (anyone who is smart is Naomi). This is not part of the assertion, as the answer in (152b) to the question in (151) sounds odder than that in (152a):

- (151) *Naomi ga kasiko-i no?* (exhaustive listing)  
 Naomi NOM be.smart-NPST Q  
 ‘Is Naomi (and only Naomi) smart?’
- (152) a. *?Iya, kanozyo wa kasikoku-na-i.*  
 no she TOP be.smart-NEG-NPST  
 ‘No, she is not smart.’
- b. *??Iya, Ken mo kasiko-i.*  
 no Ken also be.smart-NPST  
 ‘No, Ken is also smart.’

That is, the ‘only Naomi’ reading is not part of the assertion and cannot be denied as in (152b).

Note that if we explicitly introduce *dake* ‘only,’ the presupposition and the assertion will be reversed.

- (153) a. *Naomi dake ga kasiko-i.*  
 Naomi only NOM be.smart-NPST  
 ‘Only Naomi is smart.’
- b. P:  $S_m(n)$
- c. A:  $\forall x [S_m(x) \rightarrow x = n]$

In this case, what is asserted is that if anyone is smart, that person is Naomi, though the proposition that Naomi is smart is only presupposed. Thus, the oddness of the answers to the interrogative version of (153a) exhibit the following pattern in contrast to that seen in (152).

- (154) *Naomi dake ga kasiko-i no?*  
 Naomi only NOM be.smart-NPST Q  
 ‘Is only Naomi smart?’
- (155) a. *?Iya, kanozyo wa kasikoku-na-i.*  
 no she TOP be.smart-NEG-NPST  
 ‘No, she is not smart.’

- b. *Iya, Ken mo kasiko-i.*  
 no Ken also be.smart-NPST  
 ‘No, Ken is also smart.’

Next, let us consider the *ga* of neutral description (cf. Kuno 1973), where no presupposition is assumed and the assertion is a straightforward predicate-argument formula as in (156) below:

- (156) a. *Naomi ga kasiko-i.* (neutral description)  
 Naomi NOM be.smart-NPST  
 ‘Naomi is smart.’  
 b. P: –  
 c. A:  $S_m(n)$

This is because the interrogative counterpart of (156a), (157) below, can be adequately answered by (158a) but not by (158b):

- (157) *Naomi ga kasiko-i no?* (neutral description)  
 Naomi NOM be.smart-NPST Q  
 ‘Is Naomi smart?’  
 (158) a. *Iya, kanozyo wa kasikoku-na-i.*  
 no she TOP be.smart-NEG-NPST  
 ‘No, she is not smart.’  
 b. *?Iya, Ken mo kasiko-i.*  
 no Ken also be.smart-NPST  
 ‘No, Ken is also smart.’

As for the two uses of *wa*, contrast and topic maker (cf. Kuno 1973), the difference can be adequately described by assuming a separate presupposition for each use.

First, as for the *wa* of contrast, the presupposition is that there is some individual that does not satisfy the assertion part. For example:

- (159) a. *Naomi wa kasiko-i.* (contrast)  
 Naomi TOP be.smart-NPST  
 ‘Naomi (and not others) is smart.’  
 b. P:  $\exists x [x \neq n \wedge \neg S_m(x)]$   
 c. A:  $S_m(n)$

This is confirmed by the following question-answer set.

- (160) *Naomi wa kasiko-i no?* (contrast)  
 Naomi TOP be.smart-NPST Q  
 ‘Is Naomi (and not others) smart?’

- (161) a. *Iya, kanozyo wa kasikoku-na-i.*  
 no she TOP be.smart-NEG-NPST  
 ‘No, she is not smart.’  
 b. *?Iya, Ken mo kasiko-i.*  
 no Ken also be.smart-NPST  
 ‘No, Ken is also smart.’

As for the *wa* of topicalization, on the other hand, the presupposition is that there is some pragmatic relation between the topicalized individual and the contents of the sentence. Thus, we assume the following:

- (162) a. *Naomi wa kasiko-i.* (topicalization)  
 Naomi TOP be.smart-NPST  
 ‘As for Naomi, she is smart.’  
 b.  $P: R(n, S_m(n))$   
 c.  $A: S_m(n)$

This is again confirmed by the following question-answer set.

- (163) *Naomi wa kasiko-i no?* (topicalization)  
 Naomi TOP be.smart-NPST Q  
 ‘As for Naomi, is she smart?’  
 (164) a. *Iya, kanozyo wa kasikoku-na-i.*  
 no she TOP be.smart-NEG-NPST  
 ‘No, she is not smart.’  
 b. *?Iya, Ken mo kasiko-i.*  
 no Ken also be.smart-NPST  
 ‘No, Ken is also smart.’

See Gunji (2012) for further discussion.

## 2.5 Copula

Japanese sentences involving the copula *da* have been classified into at least the following three patterns, depending on whether the subject is marked by nominative *ga* or topic marker *wa*:

- (165) a. *Predicational* sentence  
*Naomi wa gakusei-da.*  
 Naomi TOP student-COP.NPST  
 ‘Naomi is a student.’
- b. *Specificational* sentence  
*Naomi ga gakusei-da.*  
 Naomi NOM student-COP.NPST  
 ‘Naomi is the student.’
- c. *Inverse specificational* sentence  
*Gakusei wa Naomi-da.*  
 student TOP Naomi-COP.NPST  
 ‘The student is Naomi.’

Intuitively, in a predicational sentence, where the subject is marked by topical *wa*, the denotation of the subject has a property (is a member of the set) expressed by the predicate. In a specificational sentence, with the subject marked by nominative *ga*, on the other hand, what has the property (is the member of the set) expressed by the predicate is the denotation of the subject. An inverse specificational sentence is a counterpart to (with the same meaning as) the specificational sentence in which the subject and the predicate are interchanged and the subject is marked by *wa*.

Thus, we have the following scheme:

- (166) a. *Naomi wa gakusei-da.* (predicational)  
 The individual **[[Naomi]]** is a member of the set **[[gakusei]]**.
- b. *Naomi ga gakusei-da.* (specificational)  
 If you search for a member of the set **[[gakusei]]**, you will find the individual **[[Naomi]]**.
- c. *Gakusei wa Naomi-da.* (inverse specificational)  
 If you search for a member of the set **[[gakusei]]**, you will find the individual **[[Naomi]]**.

In the following, I present a semantics of the Japanese copula *da*, based on an extensional version of Montague’s analysis of *be* in PTQ (Montague 1974).

- (167) a. PTQ's intensional *be*:  $\llbracket \mathbf{be} \rrbracket = \lambda p. \lambda x. \sim p (\wedge \lambda y. [\sim x = \sim y])$   
 b. Extensional *be*:  $\llbracket \mathbf{be} \rrbracket = \lambda p. \lambda u. p (\lambda v. [u = v])$   
 c. Extensional *da*:  $\llbracket \mathbf{da} \rrbracket = \lambda p. \lambda x. p (\lambda y. [x = y])^{20}$

First, we calculate the semantics of (168) in order of the steps indicated in (169).

- (168) *Nattyan wa Naomi-da.*  
 Natchan TOP Naomi-COP.NPST  
 'Natchan is Naomi.'

In the semantics given in (167c),  $\llbracket \mathbf{da} \rrbracket$  takes an argument of the type generalized quantifier  $\langle \langle e, t \rangle, t \rangle$ . Thus, we treat *Naomi* as a generalized quantifier with the lexical meaning shown in (169a).<sup>21</sup>

- (169) a.  $\llbracket \mathbf{Naomi} \rrbracket = \lambda P. [P(n)]$   
 b.  $\llbracket \mathbf{Naomi-da} \rrbracket = \llbracket \mathbf{da} \rrbracket (\llbracket \mathbf{Naomi} \rrbracket)$   
 $= \lambda p. \lambda x. p (\lambda y. [x = y]) (\llbracket \mathbf{Naomi} \rrbracket)$   
 $= \lambda x. \llbracket \mathbf{Naomi} \rrbracket (\lambda y. [x = y])$   
 $= \lambda x. \lambda P. [P(n)] (\lambda y. [x = y])$   
 $= \lambda x. [\lambda y. [x = y](n)]$   
 $= \lambda x. [x = n]$   
 c.  $\llbracket \mathbf{Nattyan} \rrbracket = \lambda P. [P(n_a)]$   
 d.  $\llbracket \mathbf{Nattyan-wa Naomi-da} \rrbracket =$   
 $\llbracket \mathbf{Nattyan} \rrbracket (\llbracket \mathbf{Naomi-da} \rrbracket)$   
 $= \lambda P. [P(n_a)] (\llbracket \mathbf{Naomi-da} \rrbracket)$   
 $= \llbracket \mathbf{Naomi-da} \rrbracket (n_a)$   
 $= \lambda x. [x = n](n_a)$   
 $= [n_a = n]$

Thus, we have the interpretation that the individuals denoted by *Nattyan* and *Naomi* are one and the same person.

<sup>20</sup> Montague (1974) uses  $x, y$  as variables of type  $\langle s, e \rangle$ , i. e., an individual concept, and  $u, v$  as variables of type  $e$ , i. e., an individual. I will use  $x, y$  as variables of type  $e$  in the following.

<sup>21</sup> In this example, we ignore the semantic contribution of the topic marker *wa*, for which see Section 2.4.

### 2.5.1 Common noun phrases as generalized quantifiers

In the following, we will consider the semantics of the three types of copular sentences shown in (165).

In *gakusei-da*, since  $\llbracket \mathbf{da} \rrbracket$  takes an argument of the type generalized quantifier, we have to treat  $\llbracket \mathbf{gakusei} \rrbracket$  also as a generalized quantifier. This amounts to implicit (existential) quantification of Japanese noun phrases.

- (170) a. *Gakusei ga ki-ta.*  
           student NOM come-PST  
       b. ‘A/The student came.’  
       c. ‘Some students came.’

Thus, we assign the following lexical meaning as a generalized (existential) quantifier to *gakusei*.

- (171) *gakusei* as a generalized quantifier  
 $\llbracket \mathbf{gakusei} \rrbracket = \lambda P . \exists z [S_i(z) \wedge P(z)]$

Using the above lexical meaning, we arrive at the following interpretation of *Gakusei ga kita*.

- (172) a.  $\llbracket \mathbf{kita} \rrbracket = Co$   
       b.  $\llbracket \mathbf{Gakusei-ga kita} \rrbracket = \llbracket \mathbf{gakusei} \rrbracket (\llbracket \mathbf{kita} \rrbracket)$   
            $= \llbracket \mathbf{gakusei} \rrbracket (Co)$   
            $= \lambda P . \exists z [S_i(z) \wedge P(z)](Co)$   
            $= \exists z [S_i(z) \wedge Co(z)]$

That is, we arrive at the interpretation that there is some individual that is a student and that individual came.

### 2.5.2 Semantics of predicational sentences

The semantics of the predicational sentence (165a) is calculated in the following way.

- (173) a. *Naomi wa gakusei-da.*  
           Naomi TOP student-COP.NPST  
           ‘Naomi is a student.’  
       b.  $\llbracket \mathbf{gakusei} \rrbracket = \lambda P . \exists z [S_i(z) \wedge P(z)]$

- c.  $\llbracket \text{gakusei-da} \rrbracket = \llbracket \text{da} \rrbracket (\llbracket \text{gakusei} \rrbracket)$   
 $= \lambda \mathcal{P} . \lambda x . \mathcal{P} (\lambda y . [x = y]) (\llbracket \text{gakusei} \rrbracket)$   
 $= \lambda x . \llbracket \text{gakusei} \rrbracket (\lambda y . [x = y])$   
 $= \lambda x . \lambda P . \exists z [S_i(z) \wedge P(z)] (\lambda y . [x = y])$   
 $= \lambda x . \exists z [S_i(z) \wedge \lambda y . [x = y](z)]$   
 $= \lambda x . \exists z [S_i(z) \wedge [x = z]]$   
 $= \lambda x . S_i(x)^{22}$
- d.  $\llbracket \text{Naomi} \rrbracket = \lambda P . [P(n)]$
- e.  $\llbracket \text{Naomi-wa gakusei-da} \rrbracket = \llbracket \text{Naomi} \rrbracket (\llbracket \text{gakusei} \rrbracket)$   
 $= \lambda P . [P(n)] (\llbracket \text{gakusei} \rrbracket)$   
 $= \llbracket \text{gakusei} \rrbracket (n)$   
 $= \lambda x . S_i(x)(n)$   
 $= S_i(n)$

The last formula says that Naomi is a member of the set of students.

### 2.5.3 Semantics of specificational sentences

#### 2.5.3.1 *ga* of exhaustive listing

Next, consider the semantics of the specificational sentence (165b). We will adopt the semantics given in Gunji (1987, 2012) for exhaustive listing (cf. (150) above):

- (174) *ga* of exhaustive listing<sup>23</sup>  
 $\llbracket \text{ga} \rrbracket = \lambda \mathcal{P} . \lambda P . \forall x [\mathcal{P}(\lambda y . [y = x]) \equiv P(x)]$
- (175) a.  $\llbracket \text{gakusei-da} \rrbracket = \lambda z . S_i(z)$  (from (173c) above)
- b.  $\llbracket \text{ga} \rrbracket = \lambda \mathcal{P} . \lambda P . \forall x [\mathcal{P}(\lambda y . [y = x]) \equiv P(x)]$
- c.  $\llbracket \text{Naomi-ga} \rrbracket = \llbracket \text{ga} \rrbracket (\llbracket \text{Naomi} \rrbracket)$   
 $= \lambda \mathcal{P} . \lambda P . \forall x [\mathcal{P}(\lambda y . [y = x]) \equiv P(x)] (\llbracket \text{Naomi} \rrbracket)$   
 $= \lambda P . \forall x [\llbracket \text{Naomi} \rrbracket (\lambda y . [y = x]) \equiv P(x)]$   
 $= \lambda P . \forall x [\lambda Q . [Q(n)] (\lambda y . [y = x]) \equiv P(x)]$   
 $= \lambda P . \forall x [\lambda y . [y = x](n) \equiv P(x)]$   
 $= \lambda P . \forall x [[n = x] \equiv P(x)]$

<sup>22</sup> The last line of (173) is equivalent to the formula one line above it. It can be proven by principles of first-order logic with identity. Dowty, Wall, and Peters (1981: 229) states the following concerning this equivalence: “For the reader unfamiliar with these, the equivalence [...] is probably best intuitively appreciated by trying to imagine how either one could be true while the other is false.”

<sup>23</sup> The symbol  $\equiv$  is for biconditional, i.e., if and only if (iff).



$$\begin{aligned}
\text{d. } \llbracket \text{Naomi-ga gakusei-da} \rrbracket &= \llbracket \text{Naomi-ga} \rrbracket (\llbracket \text{gakusei-da} \rrbracket) \\
&= \lambda P . \forall x [[n = x] \equiv P(x)] (\llbracket \text{gakusei} \rrbracket) \\
&= \forall x [[n = x] \equiv \llbracket \text{gakusei} \rrbracket (x)] \\
&= \forall x [[n = x] \equiv \lambda z . S_i(z)(x)] \\
&= \forall x [[n = x] \equiv S_i(x)]
\end{aligned}$$

Since this is an exhaustive-listing interpretation, the final formula expresses ‘Only Naomi is a student.’

### 2.5.3.2 *ga* of neutral description

On the other hand, for *ga* used to express neutral description, we will assume the following semantics.

$$\begin{aligned}
(176) \quad & \text{ga of neutral description} \\
& \llbracket \text{ga} \rrbracket = \lambda p . \lambda P . \exists x [p(\lambda y . [y = x]) \wedge P(x)] \\
(177) \quad \text{a. } & \llbracket \text{gakusei-da} \rrbracket = \lambda z . S_i(z) \text{ (from (173c))} \\
& \text{b. } \llbracket \text{ga} \rrbracket = \lambda p . \lambda P . \exists x [p(\lambda y . [y = x]) \wedge P(x)] \\
& \text{c. } \llbracket \text{Naomi-ga} \rrbracket = \llbracket \text{ga} \rrbracket (\llbracket \text{Naomi} \rrbracket) \\
& \quad = \lambda p . \lambda P . \exists x [p(\lambda y . [y = x]) \wedge P(x)] (\llbracket \text{Naomi} \rrbracket) \\
& \quad = \lambda P . \exists x [\llbracket \text{Naomi} \rrbracket (\lambda y . [y = x]) \wedge P(x)] \\
& \quad = \lambda P . \exists x [\lambda Q . [Q(n)] (\lambda y . [y = x]) \wedge P(x)] \\
& \quad = \lambda P . \exists x [\lambda y . [y = x](n) \wedge P(x)] \\
& \quad = \lambda P . \exists x [[n = x] \wedge P(x)] \\
& \text{d. } \llbracket \text{Naomi-ga gakusei-da} \rrbracket = \llbracket \text{Naomi-ga} \rrbracket (\llbracket \text{gakusei-da} \rrbracket) \\
& \quad = \lambda P . \exists x [[n = x] \wedge P(x)] (\llbracket \text{gakusei} \rrbracket) \\
& \quad = \exists x [[n = x] \wedge \llbracket \text{gakusei} \rrbracket (x)] \\
& \quad = \exists x [[n = x] \wedge \lambda z . S_i(z)(x)] \\
& \quad = \exists x [[n = x] \wedge S_i(x)] \\
& \quad = S_i(n)
\end{aligned}$$

As a result, we have the interpretation that Naomi has the property of being a student. This may be too weak an interpretation for all specificational sentences, some of which are more appropriately interpreted as *ga* expressing exhaustive listing.

### 2.5.4 Semantics of inverse specificational sentence

Consider next the semantics of the inverse specificational sentence (165c). As the semantics of *Naomi-da* is given in (169b), we will combine this with the semantics of the subject *gakusei ga*. We ignore here the semantic contribution of *wa* (for which see Section 2.4)

- (178) a.  $\llbracket \text{Naomi-da} \rrbracket = \lambda x . [x = n]$  (from (169b))
- b.  $\llbracket \text{gakusei-wa Naomi-da} \rrbracket = \llbracket \text{gakusei} \rrbracket (\llbracket \text{Naomi-da} \rrbracket)$   
 $= \lambda P . \exists z [S_i(z) \wedge P(z)] (\llbracket \text{Naomi-da} \rrbracket)$   
 $= \exists z [S_i(z) \wedge \llbracket \text{Naomi-da} \rrbracket (z)]$   
 $= \exists z [S_i(z) \wedge \lambda x . [x = n](z)]$   
 $= \exists z [S_i(z) \wedge [z = n]]$   
 $= S_i(n)$

This is the same interpretation as that of the predicational sentence (165a) (cf. (173)) and that of the specificational sentence (165b) with the *ga* of neutral description (cf. (177)).

The following is a summary of the discussion so far.

- (179) a. **Predicational:**  $\llbracket \text{Naomi-wa gakusei-da} \rrbracket = S_i(n)$
- b. **Specificational:**  $\llbracket \text{Naomi-ga gakusei-da} \rrbracket = \forall x [[n = x] \equiv S_i(x)]$
- c. **Inverse Specificational:**  $\llbracket \text{gakusei-wa Naomi-da} \rrbracket = S_i(n)$

That is, the exhaustive-listing interpretation associated with specificational sentences is not reflected in the semantics of inverse specificational sentence. In order to distinguish between (179a) and (179c), that is, mere truth-conditional semantics is not adequate.

### 2.5.5 Truth conditions and presuppositions in copular sentences

As argued in Gunji (2012), finer distinctions can be made between the various uses of *ga* and *wa* by making reference to presuppositions associated with them in addition to their truth conditions (cf. Section 2.4). We adopt this approach in the discussion below.

First, for a predicational sentence such as *Naomi wa gakusei-da* (165a), if we assume that the *wa* here is topical *wa*, the sentence has a presupposition that there is some contextually determined relation *R* between Naomi and the fact that she is a student. The following schema incorporates both the assertion and presupposition components of the meaning of this sentence.

- (180) **Predicational** (with topicalization) (cf. (162))
- a. *Naomi wa gakusei-da.* (topical)  
 Naomi TOP student-COP.NPST  
 ‘Naomi is a student.’
- b. P:  $R(n, S_i(n))$
- c. A:  $S_i(n)$

On the other hand, if we assume that the *wa* in a predicational sentence is a contrastive *wa*, we will have a schema such as the following.

- (181) **Predicational** (with contrast) (cf. (159))
- a. *Naomi wa gakusei-da.* (contrastive)  
 Naomi CNT student-COP.NPST  
 ‘Naomi is a student.’
- b. P:  $\exists x [x \neq n \wedge \neg S_i(x)]$
- c. A:  $S_i(n)$

Thus, both interpretations have the same truth condition (the usual predicational interpretation), although they may have different presuppositions.

As for specificational sentences, the previous interpretations proposed for exhaustive listing and neutral description uses of *ga* will be modified so that some part of the truth conditions can be treated as presuppositions. Following Gunji (2012), one direction of the bi-conditional in the semantics of exhaustive listing will be treated as a presupposition.

- (182) **Specificational** (with exhaustive listing) (cf. (150))
- a. *Naomi ga gakusei-da.* (exhaustive listing)  
 Naomi NOM student-COP.NPST  
 ‘Naomi is a student.’
- b. P:  $\forall x [S_i(x) \rightarrow x = n]$
- c. A:  $S_i(n)$
- (183) **Specificational** (with neutral description) (cf. (156))
- a. *Naomi ga gakusei-da.* (neutral description)  
 Naomi NOM student-COP.NPST  
 ‘Naomi is a student.’
- b. P: –
- c. A:  $S_i(n)$

As mentioned above, a specificational sentence with neutral description does not have a presupposition, so that the truth condition becomes the same as that for a predication sentence. Thus, it is more appropriate to consider *ga* as used in exhaustive listing as the meaning characteristic of specificational sentences, so we adopt (182) for the semantics of such sentences.

Finally, let us consider the inverse specificational sentence (165c). Since this sentence includes *wa*, there are two possible interpretations, one involving topical *wa* and the other involving contrastive *wa*.

For the first argument of the contextually determined relation *R* in the case of topical *wa*, we assume that some particular student is at issue.

(184) **Inverse specificational** (with topicalization)

- a. *Gakusei wa Naomi-da.* (topical)  
 student TOP Naomi-COP.NPST  
 ‘The student is Naomi.’
- b.  $P: R(\iota x S_i(x), S_i(n))$
- c.  $A: S_i(n)$

(185) **Inverse specificational** (with contrast)

- a. *Gakusei wa Naomi-da.* (contrastive)  
 student TOP Naomi-COP.NPST  
 ‘The student is Naomi.’
- b.  $P: \exists x [x \neq \iota x S_i(x) \wedge \neg S_i(x)]$
- c.  $A: S_i(n)$

Note that the presupposition in the case of contrast is somewhat unnatural, as  $\iota x S_i(x)$  makes reference to a particular student, while at the same time making reference to an individual other than this particular student that is not a student. Thus the semantics given in (184) seems more appropriate to the meaning of inverse specificational sentences.

In (171), we proposed a treatment of *gakusei* as a generalized quantifier involving existential quantification. If we extend this analysis and treat *gakusei* as a generalized quantifier involving  $\iota x S_i(x)$  that appears as the first argument of *R*, we have the following type of generalized quantifier:

- (186) Generalized quantifier involving a particular student  
 $\llbracket \text{gakusei} \rrbracket = \lambda P . [P(\iota x S_i(x))]$

Based on this, the semantics of the inverse specificational  $\llbracket \text{gakusei-wa Naomi-da} \rrbracket$  will be calculated as follows:

- (187) a.  $\llbracket \text{Naomi-da} \rrbracket = \lambda x . [x = n]$  (from (169b))  
 b.  $\llbracket \text{gakusei-wa Naomi-da} \rrbracket = \llbracket \text{gakusei} \rrbracket (\llbracket \text{Naomi-da} \rrbracket)$   
 $= \lambda P . [P(\iota x S_i(x))](\llbracket \text{Naomi-da} \rrbracket)$   
 $= \llbracket \text{Naomi-da} \rrbracket (\iota x S_i(x))$   
 $= \lambda x . [x = n](\iota x S_i(x))$   
 $= [\iota x S_i(x) = n]$

The final formula entails  $S_i(n)$ . Moreover, it also asserts that there is a unique individual that is a student. Thus, this is a stronger assertion than the one in (178). We will adopt this truth condition for inverse specificational sentences and revise (184) accordingly.

- (188) **Inverse specificational** (with topicalization)  
 a. *Gakusei wa Naomi-da.* (topical)  
 student TOP Naomi-COP-NPST  
 ‘The student is Naomi.’  
 b. P:  $R(\iota x S_i(x), S_i(n))$   
 c. A:  $\iota x S_i(x) = n$

In summary, we have the following schema.

- (189) a. **Predicational:** *Naomi wa gakusei-da* (topical)  
 P:  $R(n, S_i(n))$   
 A:  $S_i(n)$   
 b. **Predicational:** *Naomi wa gakusei-da* (contrastive)  
 P:  $\exists x [x \neq n \wedge \neg S_i(x)]$   
 A:  $S_i(n)$   
 c. **Specificational:** *Naomi ga gakusei-da* (exhaustive listing only)  
 P:  $\forall x [S_i(x) \rightarrow x = n]$   
 A:  $S_i(n)$   
 d. **Inverse specificational:** *Gakusei wa Naomi-da* (topical only)  
 P:  $R(\iota x S_i(x), S_i(n))$   
 A:  $\iota x S_i(x) = n$

As for truth conditions, the inverse specificational sentence contains the assertion that entails that only Naomi is a student. The other sentences merely assert that Naomi has the property of being a student. The exhaustive listing meaning of the specificational sentence is given as a presupposition.

### 2.5.6 *Gakutyoo* as a two-place predicate

Unlike *gakusei* ‘student’ appearing in (165) as a one-place predicate, the noun *gakutyoo* ‘president’ is associated with some specific school. Thus, in the following, we introduce a two-place predicate  $P_r: P_r(y)(x)$  to represent the semantics of this noun, meaning that  $x$  is the president of  $y$ .

The following three types of copular sentences are associated with *gakutyoo* represented in this way.<sup>24</sup>

#### (190) **Predicational**

*Naomi wa hongaku no gakutyoo-da.*

Naomi TOP this.university GEN president-COP-NPST

‘Naomi is the president of this university.’

- Topical

P:  $R(n, P_r(s_h)(n))$

A:  $P_r(s_h)(n)$

- Contrastive

P:  $\exists x [x \neq n \wedge \neg P_r(s_h)(x)]$

A:  $P_r(s_h)(n)$

#### (191) **Specificational**

*Naomi ga hongaku no gakutyoo-da.*

Naomi NOM this.university GEN president-COP-NPST

‘Naomi is the president of this university.’

- Exhaustive listing

P:  $\forall x [P_r(s_h)(x) \rightarrow x = n]$

A:  $P_r(s_h)(n)$

#### (192) **Inverse specificational**

*Hongaku no gakutyoo wa Naomi-da.*

this.university GEN president TOP Naomi-COP-NPST

‘Naomi is the president of this university.’

- Topical

P:  $R(\iota x P_r(s_h)(x), P_r(s_h)(n))$

A:  $\iota x P_r(s_h)(x) = n$

<sup>24</sup> In the following  $s_h$  denotes *hongaku* ‘this university.’

### 2.5.7 Extension of this analysis of inverse specification sentences

In the specificational sentence (191), *Naomi ga hongaku no gakutyoo-da* ‘Naomi is the president of this university’, the truth condition was given as  $P_r(s_h)(n)$ .

In the inverse specificational sentence in (189d), *Gakusei wa Naomi-da* ‘The student is Naomi’, the truth condition was given by  $\iota x S_t(x) = n$ , in which what is obtained by the  $\iota$  operator from the one-place predicate  $S_t$  of type  $\langle e, t \rangle$  is equated with the individual  $n$ , corresponding to Naomi.

In (186), as in Gunji (2015: (26)), the semantics of *gakusei* ‘student’ in (189d) was given as a generalized quantifier involving a particular student.

- (193) Generalized quantifier involving a particular student  
 $\llbracket \text{gakusei} \rrbracket = \lambda P . [P(\iota x S_t(x))]$

We can equally assume a similar semantics for *hongaku no gakutyoo* ‘the president of this university’ in the inverse specificational sentence in (192).

- (194) Generalized quantifier involving a particular president  
 $\llbracket \text{hongaku no gakutyoo} \rrbracket = \lambda P . [P(\iota x P_r(s_h)(x))]$

Let us further generalize this approach and assign a similar semantics to the specificational sentence in (191), instead of the two-place predicate  $P_r$ .

- (195) Specificational (revised)  
*Naomi ga hongaku no gakutyoo-da.*  
 Naomi NOM this.university GEN president-COP.NPST  
 ‘Naomi is the president of this university.’  
 P:  $\forall x [P_r(s_h)(x) \rightarrow x = n]$   
 A:  $n = \iota x P_r(s_h)(x)$

The truth-conditional part (A) is calculated in the following way:

- (196) a.  $\llbracket \text{da} \rrbracket = \lambda p . \lambda z . [p(\lambda z . [z = y])]$   
 b.  $\llbracket \text{hongaku-no gakutyoo-da} \rrbracket = \llbracket \text{da} \rrbracket(\llbracket \text{hongaku-no gakutyoo} \rrbracket)$   
 $= \lambda p . \lambda z . [p(\lambda y . [z = y])](\llbracket \text{hongaku-no gakutyoo} \rrbracket)$   
 $= \lambda z . \llbracket \text{hongaku-no gakutyoo-da} \rrbracket(\lambda y . [z = y])$   
 $= \lambda z . \lambda P . [P(\iota x P_r(s_h)(x))](\lambda y . [z = y])$   
 $= \lambda z . [\lambda y . [z = y](\iota x P_r(s_h)(x))]$   
 $= \lambda z . [z = \iota x P_r(s_h)(x)]$   
 c.  $\llbracket \text{ga} \rrbracket = \lambda p . \lambda P . [p(P)]$

- d.  $\llbracket \text{Naomi-ga} \rrbracket = \llbracket \text{ga} \rrbracket (\llbracket \text{Naomi} \rrbracket)$   
 $= \lambda p . \lambda P . p (P) (\llbracket \text{Naomi} \rrbracket)$   
 $= \lambda P . \llbracket \text{Naomi} \rrbracket (P)$   
 $= \lambda P . \lambda Q . [Q(n)](P)$   
 $= \lambda P . [P(n)]$
- e.  $\llbracket \text{Naomi ga hongaku-no gakutyoo-da} \rrbracket$   
 $= \llbracket \text{Naomi-ga} \rrbracket (\llbracket \text{hongaku-no gakutyoo-da} \rrbracket)$   
 $= \lambda P . [P(n)] (\llbracket \text{hongaku-no gakutyoo-da} \rrbracket)$   
 $= \llbracket \text{hongaku-no gakutyoo-da} \rrbracket (n)$   
 $= \lambda z . [z = \iota x P_r(s_h)(x)](n)$   
 $= [n = \iota x P_r(s_h)(x)]$

The semantics given in (194) can also be applied to the predicational sentence (190).

- (197) Predicational (revised)  
*Naomi wa hongaku no gakutyoo-da.*  
 Naomi TOP this.university GEN president-COP.NPST  
 ‘Naomi is the president of this university.’
- Topical  
 P:  $R(n, n = \iota x P_r(s_h)(x))$   
 A:  $n = \iota x P_r(s_h)(x)$
  - Contrastive  
 P:  $\exists x [x \neq n \wedge x = \iota x P_r(s_h)(x)]$   
 A:  $n = \iota x P_r(s_h)(x)$

The calculation of the truth condition (A) above can be obtained in exactly the same way as in the case of the specificational sentence since the truth condition of *wa*, whether it is topical or contrastive, is  $\lambda p . \lambda P . [p (P)]$ .

In summary, since the semantics of *gakutyoo* ‘president’ is given in terms of the individual constant  $\iota x P_r(s_h)(x)$ , rather than a two-place predicate, we can abbreviate this denotation as an individual constant, say *g*.

- (198) a. Generalized quantifier involving a particular president  
 $\lambda P . [P(g)]$
- b. Predicational  
*Naomi wa hongaku no gakutyoo-da.*  
 Naomi TOP this.university GEN president-COP.NPST  
 ‘Naomi is the president of this university.’
- Topical  
 P:  $R(n, n = g)$   
 A:  $n = g$



- Contrastive

P:  $\exists x [x \neq n \wedge x \neq g]$

A:  $n = g$

- c. Specificational

*Naomi ga hongaku no gakutyoo-da.*

Naomi NOM this.university GEN president-COP.NPST

‘It is Naomi who is the president of this university.’

- Exhaustive listing

P:  $\forall x [P_r(s_h)(x) \rightarrow x = n]$

A:  $n = g$

- d. Inverse specificational

*Hongaku no gakutyoo wa Naomi-da.*

this.university GEN president TOP Naomi-COP.NPST

‘The president of this university is Naomi.’

- Topical

P:  $R(g, g = n)$

A:  $g = n$

Note that the two-place predicate  $P_r$  only appears in the presupposition of the specificational sentence. The truth condition for all the above sentences is simply the identity of Naomi with the individual  $g$  that corresponds to the president of this university.

See Gunji (2015, 2016) for further discussion.

## 2.6 Questions

In this section, we take up the semantics of Japanese interrogative sentences, particularly when they are embedded as complements of such verbs as *sittei* ‘know’.

*Sittei* ‘know’ takes complements of at least three types: declaratives, yes/no interrogatives, and wh-interrogatives, which we consider in turn below.

### 2.6.1 Complements of *Know*

#### 2.6.1.1 Declarative complements

When the complement is declarative, the embedded sentence is headed (followed) by the complementizer *koto* ‘that’.<sup>25</sup>

<sup>25</sup> Note that *sir-ana-i* is the negative form of the simple non-past form *sir-u* ‘come to know,’ without *tei-* attached. The negative form *sit-tei-na-i* of *sit-tei-ru* ‘know (be in the state of having come to know)’ is not commonly used.

- (199) a. *Naomi wa Ken ga kat-ta koto o*  
 Naomi TOP Ken NOM win-PST COMP ACC  
*sit-tei-ru.*  
 come.to.know-RES-NPST  
 ‘Naomi knows that Ken won.’
- b. *Boku wa Ken ga kat-ta koto o*  
 I TOP Ken NOM win-PST COMP ACC  
*sit-tei-ru.*  
 come.to.know-RES-NPST  
 ‘I know that Ken won.’
- c. *Naomi wa Ken ga kat-ta koto o sir-ana-i.*  
 Naomi TOP Ken NOM win-PST COMP ACC come.to.know-NEG-NPST  
 ‘Naomi doesn’t know that Ken won.’
- d. *#Boku wa Ken ga kat-ta koto o sir-ana-i.*  
 I TOP Ken NOM win-PST COMP ACC come.to.know-NEG-NPST  
 ‘I don’t know that Ken won.’
- e. *Naomi wa Ken ga kat-ta koto o*  
 Naomi TOP Ken NOM win-PST COMP ACC  
*sir-ana-katta.*  
 come.to.know-NEG-PAST  
 ‘Naomi didn’t know that Ken won.’
- f. *Boku wa Ken ga kat-ta koto o*  
 I TOP Ken NOM win-PST COMP ACC  
*sir-ana-katta.*  
 come.to.know-NEG-PAST  
 ‘I didn’t know that Ken won.’

Note here the relative low acceptability of the sentence in (199d), with first-person subject, as compared with (199c), with third-person subject. As will be shown later, this is due to mismatch of the presupposition associated with the verb *sittei* ‘know’ and the truth condition for this sentence. Note that even with a first person subject, the sentence becomes acceptable if the tense is changed to the past tense as in (199 f).

### 2.6.1.2 Yes/no interrogative complements

Next, let us consider examples of *sittei* ‘know’ taking a yes/no interrogative as a complement, in which case the complement is headed by the complementizer *kadooka* ‘whether’.

- (200) a. *Naomi wa Ken ga kat-ta kadooka sit-tei-ru.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-RES-NPST  
 ‘Naomi knows whether Ken won.’
- b. *Boku wa Ken ga kat-ta kadooka sit-tei-ru.*  
 I TOP Ken NOM win-PST whether come.to.know-RES-NPST  
 ‘I know whether Ken won.’
- c. *Naomi wa Ken ga kat-ta kadooka sir-ana-i.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-NEG-NPST  
 ‘Naomi doesn’t know whether Ken won.’
- d. *Boku wa Ken ga kat-ta kadooka sir-ana-i.*  
 I TOP Ken NOM win-PST whether come.to.know-NEG-NPST  
 ‘I don’t know whether Ken won.’
- e. *Naomi wa Ken ga kat-ta kadooka sir-ana-katta.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-NEG-PAST  
 ‘Naomi didn’t know whether Ken won.’
- f. *Boku wa Ken ga kat-ta kadooka sir-ana-katta.*  
 I TOP Ken NOM win-PST whether come.to.know-NEG-PAST  
 ‘I didn’t know whether Ken won.’

When the complement is a yes/no interrogative, (200d), with a first person subject and the tense nonpast, is acceptable, unlike (199d). I will show later that there is no conflict between the presupposition and the truth condition in this case.

### 2.6.1.3 *Wh* interrogative complements

Finally, let us consider the case of *wh*-interrogative complements, which are headed by the complementizer *ka*.

- (201) a. *Naomi wa dare ga kat-ta ka sit-tei-ru.*  
 Naomi TOP who NOM win-PST Q come.to.know-RES-NPST  
 ‘Naomi knows who won.’
- b. *Boku wa dare ga kat-ta ka sit-tei-ru.*  
 I TOP who NOM win-PST Q come.to.know-RES-NPST  
 ‘I know who won.’
- c. *Naomi wa dare ga kat-ta ka sir-ana-i.*  
 Naomi TOP who NOM win-PST Q come.to.know-NEG-NPST  
 ‘Naomi doesn’t know who won.’

- d. *Boku wa dare ga kat-ta ka sir-ana-i.*  
 I TOP who NOM win-PST Q come.to.know-NEG-NPST  
 ‘I don’t know who won.’
- e. *Naomi wa dare ga kat-ta ka sir-ana-katta.*  
 Naomi TOP who NOM win-PST Q come.to.know-NEG-PAST  
 ‘Naomi didn’t know who won.’
- f. *Boku wa dare ga kat-ta ka sir-ana-katta.*  
 I TOP who NOM win-PST Q come.to.know-NEG-PAST  
 ‘I didn’t know who won.’

In this case, as in yes/no interrogatives, (201d), with a first-person subject and in nonpast tense, is acceptable.

## 2.6.2 Semantics of *know*-sentences

In this subsection, I propose a lexical semantics for complementizers and an account of how the meaning of sentences involving interrogative complements are compositionally determined.

### 2.6.2.1 Declarative complements

First, let us consider how the semantics of (199a) (repeated here as (202)) with a declarative complement is compositionally determined. In the following, the denotations of case-markers and the topic maker *wa* are assumed to be the identity function, thus contributing nothing semantically.  $\llbracket \text{Ken-ga katta} \rrbracket$  is a proposition of type  $\langle s, t \rangle$  (a set of possible worlds of type  $s$ ).  $\llbracket \text{koto} \rrbracket$  is an identity function of type  $\langle \langle s, t \rangle, \langle s, t \rangle \rangle$ ,  $x$  an individual variable of type  $e$ ,  $p$  a proposition variable of type  $\langle s, t \rangle$ ,  $P$  a predicate variable of type  $\langle e, \langle s, t \rangle \rangle$ , and  $K_n$  a predicate of type  $\langle \langle s, t \rangle, \langle e, \langle s, t \rangle \rangle \rangle$  corresponding to *sittei* ‘know’.

- (202) *Naomi wa Ken ga kat-ta koto o*  
 Naomi TOP Ken NOM win-PST COMP ACC  
*sit-tei-ru.*  
 come.to.know-RES-NPST  
 ‘Naomi knows that Ken won.’

- a.  $\llbracket \text{Naomi} \rrbracket = \lambda P . [P(n)]$   
 b.  $\llbracket \text{Ken} \rrbracket = \lambda P . [P(k)]$

- c.  $\llbracket \mathbf{katta} \rrbracket = \lambda x . [W_i(x)]^{26}$
- d.  $\llbracket \mathbf{koto} \rrbracket = \lambda p . [\{w' : w' \in p\}]^{27}$
- e.  $\llbracket \mathbf{sitteiru} \rrbracket = \lambda p . \lambda x . [K_n(p)(x)]$
- f.  $\llbracket \mathbf{Ken-ga katta} \rrbracket = \llbracket \mathbf{Ken} \rrbracket (\llbracket \mathbf{katta} \rrbracket)$   
 $= \lambda P . P[(k)](\lambda x . [W_i(x)])$   
 $= \lambda x . [W_i(x)](k)$   
 $= W_i(k)$
- g.  $\llbracket \mathbf{Ken-ga katta koto} \rrbracket$   
 $= \llbracket \mathbf{koto} \rrbracket (\llbracket \mathbf{Ken-ga katta} \rrbracket)$   
 $= \lambda p . [\{w' : w' \in p\}](W_i(k))$   
 $= \{w' : w' \in W_i(k)\}$
- h.  $\llbracket \mathbf{Ken-ga katta koto-o sitteiru} \rrbracket = \llbracket \mathbf{sitteiru} \rrbracket (\llbracket \mathbf{Ken-ga katta-koto} \rrbracket)$   
 $= \lambda p . \lambda x . [K_n(p)(x)](\{w' : w' \in W_i(k)\})$   
 $= \lambda x . [K_n(\{w' : w' \in W_i(k)\})(x)]$
- i.  $\llbracket \mathbf{Naomi-wa Ken-ga katta koto-o sitteiru} \rrbracket$   
 $= \llbracket \mathbf{Naomi} \rrbracket (\llbracket \mathbf{Ken-ga katta koto-o sitteiru} \rrbracket)$   
 $= \lambda P . [P(n)](\lambda x . [K_n(\{w' : w' \in W_i(k)\})(x)])$   
 $= \lambda x . [K_n(\{w' : w' \in W_i(k)\})(x)](n)$   
 $= K_n(\{w' : w' \in W_i(k)\})(n)$

The lexical meaning of  $K_n$  is assumed to be the following. As is well-known, since *sittei* ‘know’ has a presupposition that the complement is true, we will consider both its presupposition (P) and its truth condition (A) in the following.<sup>28</sup>

- (203) In world  $w$ , for proposition  $p$  expressing the semantics of an embedded declarative sentence, and for individual  $a$ ,  $w \in K_n(p)(a)$  iff

- P:  $w \in p$   
 A:  $\text{BEL}(a)(w) \subseteq p$

<sup>26</sup>  $\llbracket \mathbf{katta} \rrbracket$  is assumed to be of type  $\langle e, \langle s, t \rangle \rangle$ . Thus,  $W_i(x)$  is of type  $\langle s, t \rangle$ , i.e., a proposition (set of possible worlds).

<sup>27</sup> Since  $\llbracket \mathbf{koto} \rrbracket$  is an identity function, this expression could be simply written as  $\lambda p . p$ . However, I will write it this way to emphasize the fact that  $p$  is a set of worlds. As we will see later, the contrast becomes clearer when negation is involved.

<sup>28</sup> Since (203P) is not cancellable, the P part may be a conventional implicature (cf. Grice (1975), Karttunen and Peters (1979), and Potts (2005), among others) rather than a presupposition. In the following, without making finer distinctions, P expresses a non-truth-conditional meaning, whether that be a presupposition or an implicature, and I will continue to call such a meaning generically a ‘presupposition’.

(203P) expresses the presupposition that the proposition  $p$  corresponding to the complement sentence is true in the world  $w$  in which the predicate is evaluated. On the other hand, (203A) expresses that  $BEL(a)(w)$ , the belief worlds of  $a$  (the set of worlds which is compatible with what  $a$  believes) in  $w$ , is a subset of the set of worlds denoted by the complement sentence.

Since the P part ( $w \in p$ ) expresses that  $p$  holds in the speaker's belief worlds, it can be rewritten as  $BEL(s)(w) \subseteq p$ . Thus, we have the following representation:

(204) In world  $w$ , for proposition  $p$  expressing the semantics of an embedded declarative sentence and for individual  $a$ ,  $w \in K_n(p)(a)$  iff

P:  $BEL(s)(w) \subseteq p$

A:  $BEL(a)(w) \subseteq p$

From the above, (199a) will have the following P and A parts:

(205) *Naomi wa Ken ga kat-ta koto o sit-tei-ru.*

Naomi TOP Ken NOM win-PST COMP ACC come.to.know-RES-NPST  
'Naomi knows that Ken won.'

In  $w$ ,  $w \in \llbracket \text{Naomi-wa Ken-ga katta-koto-o sitteiru} \rrbracket$  iff

$w \in K_n(\{w' : w' \in W_i(k)\})(n)$  iff

P:  $BEL(s)(w) \subseteq \{w' : w' \in W_i(k)\}$

A:  $BEL(n)(w) \subseteq \{w' : w' \in W_i(k)\}$

Since both an affirmative sentence and its negative counterpart have the same presupposition, a negative sentence will have the following P and A parts.

(206) In  $w$ ,  $w \notin K_n(p)(a)$  iff

P:  $BEL(s)(w) \subseteq p$

A:  $BEL(a)(w) \not\subseteq p$

Hence, (199c), the negative counterpart of (199a), will have the following semantics.

(207) *Naomi wa Ken ga kat-ta koto o sir-ana-i.*

Naomi TOP Ken NOM win-PST COMP ACC come.to.know-NEG-NPST  
'Naomi doesn't know that Ken won.'

In  $w$ ,  $w \in \llbracket \text{Naomi-wa Ken-ga katta-koto-o siranai} \rrbracket$  iff

$w \notin K_n(\{w' : w' \in W_i(k)\})(n)$  iff

P:  $BEL(s)(w) \subseteq \{w' : w' \in W_i(k)\}$

A:  $BEL(n)(w) \not\subseteq \{w' : w' \in W_i(k)\}$

While both (205) and (207) have the same presupposition that Ken won in the speaker's belief worlds, in Naomi's belief worlds, Ken won in (205) but she doesn't have such a belief in (207).

As for (199b, d), since the subject is the first-person (speaker), both the presupposition and the truth condition involve the speaker's belief worlds. Thus, in the negated (199d), the A and P parts contradict each other.

- (208) *Boku wa Ken ga kat-ta koto o sit-tei-ru.*  
 I TOP Ken NOM win-PST COMP ACC come.to.know-RES-NPST  
 'I know that Ken won.'

In  $w$ ,  $w \in \llbracket \text{Boku-wa Ken-ga katta-koto-o sitteiru} \rrbracket$  iff

$$\begin{aligned} w &\in K_n(\{w' : w' \in W_i(k)\})(s) \text{ iff} \\ \text{P: } &\text{BEL}(s)(w) \subseteq \{w' : w' \in W_i(k)\} \\ \text{A: } &\text{BEL}(s)(w) \subseteq \{w' : w' \in W_i(k)\} \end{aligned}$$

- (209) #*Boku wa Ken ga kat-ta koto o sir-ana-i.*  
 I TOP Ken NOM win-PST COMP ACC come.to.know-NEG-NPST  
 'I don't know that Ken won.'

In  $w$ ,  $w \in \llbracket \text{Boku-wa Ken-ga katta-koto-o siranai} \rrbracket$  iff

$$\begin{aligned} w &\notin K_n(\{w' : w' \in W_i(k)\})(s) \text{ iff} \\ \text{P: } &\text{BEL}(s)(w) \subseteq \{w' : w' \in W_i(k)\} \\ \text{A: } &\text{BEL}(s)(w) \not\subseteq \{w' : w' \in W_i(k)\} \end{aligned}$$

### 2.6.2.2 Yes/no interrogative complements

The semantics of interrogatives is such that their denotations cannot simply be made propositions. There have been various attempts to address this problem (cf. Hamblin 1973; Karttunen 1977; Heim 1994; and Sharvit 2002; among others). Here, I will adopt a relatively classical approach first proposed by Karttunen (1977), which is adequate for our purposes in the discussion to follow. According to Karttunen (1977), the semantics of an interrogative is an intension of a set of propositions that make the interrogative true. Thus, its type is  $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$ .

- (210) In  $w$ ,  $\llbracket \text{Ken-ga katta-kadooka} \rrbracket(w) =$   
 $\{p : w \in p \wedge [p = \{w' : w' \in W_i(k)\} \vee p = \{w' : w' \notin W_i(k)\}]\}$

Hence, the complementizer *kadooka* is given the following lexical meaning:

- (211)  $\llbracket \text{kadooka} \rrbracket = \lambda q . \{p : w \in p \wedge [p = \{w' : w' \in q\} \vee p = \{w' : w' \notin q\}]\}$

A direct interrogative will have the same semantics as (210).

- (212) *Ken ga kat-ta no?*  
 Ken NOM win-PST Q  
 ‘Did Ken win?’  
 In  $w$ ,  $\llbracket \text{Ken-ga katta-no?} \rrbracket(w) =$   
 $\{p : w \in p \wedge [p = \{w' : w' \in W_i(k)\} \vee p = \{w' : w' \notin W_i(k)\}]\}$

Verbs like *tazune* ‘ask’ will have an interrogative headed by *kadooka*, whose semantics is given in (210), as its complement.

- (213) *Naomi wa Ken ga kat-ta kadooka tazune-ta.*  
 Naomi TOP Ken NOM win-PST whether ask-PST  
 ‘Naomi asked whether Ken won.’  
 In  $w$ ,  $w \in \llbracket \text{Naomi-wa Ken-ga katta-kadooka tazuneta} \rrbracket$  iff  
 $w \in \text{Ask}(n, \{p : w \in p \wedge [p = \{w' : w' \in W_i(k)\} \vee p = \{w' : w' \notin W_i(k)\}]\})$

On the other hand, since  $K_n$ , the lexical semantics given for *sittei* ‘know’, takes a proposition (a set of worlds) as one of its arguments, it cannot take the semantics of yes/no interrogatives (a set of propositions). Thus, following Heim (1994), we will assume that a verb like *sittei* ‘know’, when following an interrogative, takes a set of true-answer propositions of the interrogative, not the semantics of interrogatives itself.

- (214) *Naomi wa Ken ga kat-ta kadooka sit-tei-ru.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-RES-NPST  
 ‘Naomi knows whether Ken won.’  
 In  $w$ ,  $w \in \llbracket \text{Naomi wa Ken-ga katta-kadooka sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w))(n)$

Here,  $\text{ANS}_w$  is a function from the semantics of interrogatives (a set of propositions) to a proposition (a set of worlds), as defined below. In the following  $Q$  denotes a variable of type  $\langle s, \langle \langle s, t \rangle, t \rangle \rangle$ , corresponding to the semantics of interrogatives.<sup>29</sup>

- (215)  $\text{ANS}_w(Q)(w) = \{w' : w' \in \cap\{p : p \in Q(w) \wedge w \in p\}\} = \cap\{p : p \in Q(w) \wedge w \in p\}$

$\text{ANS}_w$  gives the intersection of all the true-answer propositions in the members of the semantics of the interrogative  $Q$ .

We have the following representation from (210) and (215).

- (216)  $\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w)$   
 $= \cap\{p : p \in \{p : w \in p \wedge [p = \{w' : w' \in W_i(k)\} \vee p = \{w' : w' \notin W_i(k)\}]\} \wedge w \in p\}$   
 $= \cap\{p : w \in p \wedge [p = \{w' : w' \in W_i(k)\} \vee p = \{w' : w' \notin W_i(k)\}]\}$

<sup>29</sup>  $\text{ANS}_w$  is equivalent to  $\text{ans}_i$  in Heim (1994), or  $\text{ANS}_{\text{weak}}$  in Sharvit (2002).



$K_n$  that takes the semantics of a yes/no interrogative as its argument doesn't presuppose that  $\text{ANS}_w$ , the set of true-answer propositions, holds in the belief world of the speaker. Thus, unlike declarative complements, no presupposition is assumed.

- (217) In world  $w$ , for  $Q$  expressing the semantics of an embedded yes/no interrogative sentence, and individual  $a$ ,  $w \in K_n(\text{ANS}_w(Q)(w))(a)$  iff  
 P: –  
 A:  $\text{BEL}(a)(w) \subseteq \text{ANS}_w(Q)(w)$

Based on (217), we arrive finally at the semantics of (214) in the following form:

- (218) *Naomi wa Ken ga kat-ta kadooka sit-tei-ru.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-RES-NPST  
 'Naomi knows whether Ken won.'  
 In  $w$ ,  $w \in \llbracket \text{Naomi wa Ken-ga katta-kadooka sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w))(n)$  iff  
 P: –  
 A:  $\text{BEL}(n)(w) \subseteq \text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w)$

Similarly, we arrive at the semantics indicated for the sentences following.

- (219) *Naomi wa Ken ga kat-ta kadooka sir-ana-i.*  
 Naomi TOP Ken NOM win-PST whether come.to.know-NEG  
 'Naomi doesn't know whether Ken won.'  
 In  $w$ ,  $w \in \llbracket \text{Naomi wa Ken-ga katta-kadooka siranai} \rrbracket$  iff  
 $w \notin K_n(\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w))(n)$  iff  
 P: –  
 A:  $\text{BEL}(n)(w) \not\subseteq \text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w)$
- (220) *Boku wa Ken ga kat-ta kadooka sit-tei-ru.*  
 I TOP Ken NOM win-PST whether come.to.know-RES-NPST  
 'I know whether Ken won.'  
 In  $w$ ,  $w \in \llbracket \text{Boku wa Ken-ga katta-kadooka sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w))(s)$  iff  
 P: –  
 A:  $\text{BEL}(s)(w) \subseteq \text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w)$
- (221) *Boku wa Ken ga kat-ta kadooka sir-ana-i.*  
 I TOP Ken NOM win-PST whether come.to.know-RES-NEG  
 'I don't know whether Ken won.'  
 In  $w$ ,  $w \in \llbracket \text{Boku-wa Ken-ga katta-kadooka siranai} \rrbracket$  iff  
 $w \notin K_n(\text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w))(s)$  iff

- P: –  
 A:  $\text{BEL}(s)(w) \not\subseteq \text{ANS}_w(\llbracket \text{Ken-ga katta-kadooka} \rrbracket)(w)$

Note that in (221), there is no contradiction between the presupposition, which is null, and the truth condition as we saw in the case of (209).

### 2.6.2.3 *Wh*-interrogative complements

We consider next the semantics of *wh*-interrogatives. According to the semantics proposed by Karttunen (1977), we have the following schema.

- (222) In  $w$ ,  $\llbracket \text{dare-ga katta-ka} \rrbracket(w) =$   
 $\{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$

Thus, *dare* ‘who’ and the complementizer *ka* will have the following lexical semantics.

- (223) a.  $\llbracket \text{dare} \rrbracket = \lambda P . \lambda x . [P(x)]$   
 b.  $\llbracket \text{ka} \rrbracket = \lambda P . [\{p : w \in p \wedge [p = \{w' : \exists x [w' \in P(x)]]\}]$

The semantics of *dare* ‘who’ is of type  $\langle\langle e, \langle s, t \rangle \rangle, \langle e, \langle s, t \rangle \rangle\rangle$ , taking a predicate argument of type  $\langle e, \langle s, t \rangle \rangle$  and yielding a predicate of type  $\langle e, \langle s, t \rangle \rangle$ , which corresponds to the set of individuals that satisfy the given predicate. Thus, the semantics of *Dare ga katta* ‘who won’ will have the following semantics.

- (224)  $\llbracket \text{dare-ga katta} \rrbracket = \lambda x . [W_i(x)]$

The semantics of the complementizer *ka*,  $\llbracket \text{ka} \rrbracket$ , takes the above semantics of  $\llbracket \text{dare-ga katta} \rrbracket$ , as its argument, resulting in an existential quantification over individuals as shown in (222).

The direct interrogative counterpart will have the same semantics as (222):

- (225) *Dare ga kat-ta no?*  
 who NOM win-PST Q  
 ‘Who won?’  
 In  $w$ ,  $\llbracket \text{dare-ga katta-no?} \rrbracket(w) =$   
 $\{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$

A verb like *tazune* ‘ask’ will have the interrogative (222) as its argument.

(226) *Naomi wa dare ga kat-ta ka tazune-ta.*

Naomi TOP who NOM win-PST Q ask-PST

‘Naomi asked whether Ken won.’

In  $w, w \in \llbracket \text{Naomi-wa dare-ga katta-ka tazuneta} \rrbracket$  iff

$$w \in \text{Ask}(n, \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]\}]\})$$

On the other hand, as with yes/no interrogatives, since  $K_n$  takes a proposition (a set of worlds) as its argument, it cannot take the semantics of *wh*-interrogatives (a set of propositions). Thus, similarly to (214), we assume that *sittei* ‘know’ takes a set of true-answer propositions of the interrogative complement.

(227) *Naomi wa dare ga kat-ta ka sit-tei-ru.*

Naomi TOP who NOM win-PST Q come.to.know-RES-NPST

‘Naomi knows who won.’

In  $w, w \in \llbracket \text{Naomi-wa dare-ga katta-ka sitteiru} \rrbracket$  iff

$$w \in K_n(\text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w))(n)$$

Here,  $\text{ANS}_s$  is a function from the semantics of interrogatives (a set of propositions) to a proposition (a set of worlds), as defined below:<sup>30</sup>

$$(228) \text{ANS}_s(Q)(w) = \{w' : \text{ANS}_w(Q)(w) = \text{ANS}_w(Q)(w')\}$$

We obtain the following representation from (222) and (228).

$$(229) \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$$

$$= \{w' : \text{ANS}_w(\llbracket \text{dare-ga katta-ka} \rrbracket)(w) = \text{ANS}_w(\llbracket \text{dare-ga katta-ka} \rrbracket)(w')\}$$

where

$$\text{ANS}_w(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$$

$$= \cap \{p : p \in \llbracket \text{dare-ga katta-ka} \rrbracket(w) \wedge w \in p\}$$

$$= \cap \{p : p \in \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]\}]\} \wedge w \in p\}$$

$$= \cap \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]\}]\}$$

<sup>30</sup> This is equivalent to  $\text{ans}_2$  in Heim (1994). A verb like *sittei* ‘come to know’ is known to have strong exhaustivity, where, for example, knowing who won also entails knowing who didn’t win. Thus, rather than using  $\text{ans}_1$ , which corresponds to weak exhaustivity, we choose to adopt  $\text{ans}_2$ , which corresponds to strong exhaustivity and is defined using  $\text{ans}_1$ .

(i) a.  $\text{ans}_1(Q)(w) = \cap \{p : p \in Q(w) \wedge w \in p\}$

b.  $\text{ans}_2(Q)(w) = \{w' : \text{ans}_1(Q)(w) = \text{ans}_1(Q)(w')\}$

$K_n$  that takes the semantics of a *wh*-interrogative as its argument presupposes that the speaker's belief world is included in the semantics of the interrogative (a set of propositions). Thus, as with the case of declarative complements, we will assume the following schema for its presupposition and truth condition.

- (230) In  $w$ ,  $K_n(\text{ANS}_s(Q)(w))(a) = 1$  iff  
 P:  $\text{BEL}(s)(w) \in Q(w)$   
 A:  $\text{BEL}(a)(w) \subseteq \text{ANS}_s(Q)(w)$

Based on (230), we arrive finally at the semantics of (227) as follows:

- (231) *Naomi wa dare ga kat-ta ka sit-tei-ru.*  
 Naomi TOP who NOM win-PST Q come.to.know-RES-NPST  
 'Naomi knows who won.'  
 In  $w$ ,  $w \in \llbracket \text{Naomi-wa dare-ga katta-ka sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w))(n)$  iff  
 P:  $\text{BEL}(s)(w) \in \llbracket \text{dare-ga katta-ka} \rrbracket(w)$   
 $= \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$   
 A:  $\text{BEL}(n)(w) \subseteq \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$

That is, the presupposition of *Naomi wa dare ga katta ka sit-tei-ru* 'Naomi knows who won' is that there is someone who won in the speaker's belief world.

Similarly, we have the semantics indicated for the sentences following:

- (232) *Naomi wa dare ga kat-ta ka sir-ana-i.*  
 Naomi TOP who NOM win-PST Q come.to.know-NEG-NPST  
 'Naomi doesn't know who won.'  
 In  $w$ ,  $w \in \llbracket \text{Naomi wa dare-ga katta-ka siranai} \rrbracket$  iff  
 $w \notin K_n(\text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w))(n)$  iff  
 P:  $\text{BEL}(s)(w) \in \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$   
 A:  $\text{BEL}(n)(w) \not\subseteq \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$

- (233) *Boku wa dare ga kat-ta ka sit-tei-ru.*  
 I TOP who NOM win-PST Q come.to.know-RES-NPST  
 'I know who won.'  
 In  $w$ ,  $w \in \llbracket \text{Boku wa dare-ga katta-ka sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_s(\llbracket \text{dare-ga katta} \rrbracket)(w))(s)$  iff  
 P:  $\text{BEL}(s)(w) \in \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$   
 A:  $\text{BEL}(s)(w) \subseteq \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$

- (234) *Boku wa dare ga kat-ta ka sir-ana-i.*  
 I TOP who NOM win-PST Q come.to.know-NEG-NPST  
 ‘I don’t know who won.’  
 In  $w, w \in \llbracket \text{Boku wa dare-ga katta-ka siranai} \rrbracket$  iff  
 $w \notin K_n(\text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w))(s)$  iff  
 P:  $\text{BEL}(s)(w) \in \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$   
 A:  $\text{BEL}(s)(w) \not\subseteq \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$

Note that in (234), there is no contradiction between the presupposition and the truth condition, unlike in (209). The presupposition requires the speaker to know that someone won, but the truth condition says that the speaker doesn’t know who won.

See Gunji (2017) for further discussion of these and related issues.

#### 2.6.2.4 Concealed questions

The above semantics for *wh*-interrogatives can be extended to so-called ‘concealed questions’ where the complement is not an explicit interrogative.

- (235) *Naomi wa kat-ta hito o sit-tei-ru.*  
 Naomi TOP win-PST person ACC come.to.know-RES-NPST  
 ‘Naomi knows the person who won.’

This sentence is actually ambiguous. It can mean either that Naomi personally knows the winner or that Naomi only knows who won, even though she may not know that person personally.

For the first interpretation, the semantics of *sittei* ‘know’ is simply a two place predicate with two individual type arguments, with no associated presupposition.

For the second interpretation, the semantics of *sittei* ‘know’ is just the same as proposed for (231).

- (236) *Naomi wa kat-ta hito o sit-tei-ru.*  
 Naomi TOP win-PST person ACC come.to.know-RES-NPST  
 ‘Naomi knows the person who won (= Naomi knows who won).’  
 In  $w, w \in \llbracket \text{Naomi wa katta hito-o sitteiru} \rrbracket$  iff  
 $w \in K_n(\text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w))(n)$  iff  
 P:  $\text{BEL}(s)(w) \in \llbracket \text{dare-ga katta-ka} \rrbracket(w)$   
 $= \{p : w \in p \wedge [p = \{w' : \exists x [w' \in W_i(x)]]\}$   
 A:  $\text{BEL}(n)(w) \subseteq \text{ANS}_s(\llbracket \text{dare-ga katta-ka} \rrbracket)(w)$

Although further mechanisms are necessary to derive the interrogative-like semantics for the relative clause *katta-hito* ‘person who won, I will not provide a detailed analysis of those here.

### 3 Conclusion

In this chapter, I have presented fundamental concepts commonly used in formal semantics based on logical representations. There are several advantages to this kind of approach:

- (237) a. It is truth-conditional and hence explicit in representation.
- b. It is compositional and hence has a well-motivated syntax-semantic interface.
- c. It is model-theoretic and hence has an appropriate connection to the real world.

(237a) is concerned with how to express meaning in an explicit representation. Most formal-semantic approaches use some kind of formal system as a meta-language, most notably mathematics (set theory) and logic. Although such formal systems may sometimes allow less freedom in representation, they have advantages that overcome their apparent drawbacks. For example, scope ambiguities are best handled by a system that allows the representation of quantifiers of multiple sorts. Rather than relying on an intuitive grasp of the meaning through, say, tree diagrams or graphical representations of various sorts, logical formulae are explicit and objective so that the same understanding about what is going on is conveyed to anyone seeing them.

(237b) allows one to obtain the meaning from what is actually seen (or heard) in the object language in question. Except for certain idiomatic expressions, language expressions are transparently interpreted in a relatively local environment; usually relationships between adjacent expressions determine the partial meaning and become building blocks for larger expressions. Thus, abstract structures involving fancy operations are usually not necessary to represent the semantics. The syntactic structure is the semantic structure in most cases.

The third advantage in (237c) is concerned with the purpose of semantics. Semantics is necessary to understand what language expressions represent vis-à-vis the world we live in. Model theory can be utilized to gain an understanding of the world beginning from smaller parts of the world, not the entire world from the beginning. We are then able to gradually broaden our understanding of the world by enlarging the model step by step.

In the latter half of this chapter, I discussed various semantic phenomena in Japanese. Although the topics I covered are varied and not necessarily related to one another, the method I employed in analyzing problems associated with each of those topics was uniform and consistent. In particular, I tried to provide a lexical semantics for each lexical item appearing in the various constructions I considered. Once this step is taken, the meaning of phrases and sentences is almost automatically calcu-

lated based on the principle of compositionality, as shown in the step-by-step exposition I provided of the calculation of the meaning of many of the example sentences in this chapter.

Semantic analyses allow us to take a comparative view on languages. Language-neutral representations allow us to compare different languages and notice the differences and similarities among them. For example, in the analysis of passives given in this chapter, one part exactly parallels the English passive, but the other part is specific to Japanese. Japanese *sika* has essentially the same semantics as English *only* but behaves, unlike its English counterpart, as a negative polarity item. The treatment proposed for the Japanese copula *da* is essentially the same as that proposed for English *be* in Montague's (1974) analysis. The difference is, however, in the existence of *ga* and *wa* in Japanese. Due to these, the resultant analysis of Japanese copular constructions is somewhat more complicated than that proposed by Montague for English. For the analysis of questions in Japanese, likewise, I drew on many previous analyses proposed for other languages (mostly English).

Formal-semantic treatments thus provide linguists with tools for the comparative analysis of different languages, thereby contributing to the discovery of language universals without having to be troubled by minute differences in morphological and syntactic structure. Since the mathematical tools used in formal semantics have a long history in science and have been fully developed, this way of analyzing language will continue to be an effective approach even as syntactic paradigms change in the future.

## Suggested readings

Due to lack of space, many of the descriptions above have been kept to a minimum, with many details and clarifications omitted. Those interested in learning about formal semantics in greater depth may wish to consult the following textbooks: de Swart (1998), Heim and Kratzer (1998), Chierchia and McConnell-Ginet (2000), Kearns (2011), and Portner (2004), among others. Lewis (1970) is also a good brief introduction to how model-theoretic semantics works. Partee et al. (1990) provides mathematical foundations for doing linguistics in general and semantics in particular. Kinsui and Imani (2000) is one of the few introductory books on semantics and pragmatics written in Japanese. As for intensional and model-theoretic semantics, particularly Montague's PTQ (Montague 1974), see Dowty et al. (1981).

## Additional abbreviations

CNT – contrastive, GOAL – goal, NPST – nonpast

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## 5 Sentence structure and quantifier scope in Japanese: A retrospective and reanalysis

### 1 Introduction

The main goal of this chapter is to summarize the current state of research on sentence interpretation involving quantifier scope in Japanese and to address what we see to be some inadequacies in existing analyses proposed to account for such interpretation. In our assessment, past studies have been successful in identifying crucial data and proposing generalizations about quantifier scope that are relevant to syntax, but a more comprehensive framework that clarifies the role of both syntactic and non-syntactic factors, and their interrelationship, in quantifier scope interpretation has yet to be developed. One of the goals of this chapter will be to propose a theoretical framework that is capable of doing so, while accounting for generalizations that have been proposed so far.

Sentences involving quantity expressions give rise to varying types of readings. Past research on quantifier scope in Japanese has generally focused on what are called *wide scope readings* (e.g. (1b) for (1a)), readings whose description requires that two quantifiers corresponding to two nominal expressions be arranged in such a way that one is within the scope of the other, and it is readings of this kind that we focus on in this chapter.<sup>1</sup>

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<sup>1</sup> We do not for example discuss in this chapter branching readings in the sense of Barwise (1979), e.g. (i-b) for (i-a), cumulative readings in the sense of Scha (1984), e.g. (ii-b) for (ii-a), or collective readings in the sense of Landman (1996), e.g. (iii-b) for (iii-a).

- (i) a. (= Jackendoff 1972: 307 example [756])  
*I told many of the men three of the stories.*  
b.  $\exists X (X \subseteq \text{man} \wedge |X| \geq k) \exists Y (Y \subseteq \text{story} \wedge |Y| = 3) \forall x (x \in X) \forall y (y \in Y) [I \text{ told } x \ y]$ , where  $k$  is an integer considered to be large in the relevant context  
(I.e. there are many men and three stories such that I told each of the men each of the stories.)
- (ii) a. (= Scha 1984: 146 example [1])  
*600 Dutch firms have 5000 American computers.*  
b.  $\exists X (X \subseteq \text{dutch\_firm} \wedge |X| = 600) \exists Y (Y \subseteq \text{american\_computer} \wedge |Y| = 5000) [\forall x (x \in X) \exists y (y \in Y) [x \text{ has } y] \wedge \forall y (y \in Y) \exists x (x \in X) [x \text{ has } y]]$   
(I.e. the number of Dutch firms that have American computers is 600, and the number of American computers possessed by Dutch firms is 5000.)
- (iii) a. (= Landman 1996: 435 example [17])  
*Forty journalists asked the president only seven questions.*  
b.  $\exists X (X \subseteq \text{journalist} \wedge |X| = 40) \exists Y (Y \subseteq \text{question} \wedge |Y| = 7) [X \text{ asked the president } Y]$   
(I.e. there is a group of forty journalists and a group of seven questions such that the former asked the president the latter.)

- (1) a. *Every boy loves some girl.*  
 b. For each boy, there is at least one girl he loves.

In the case of Japanese, where the word order is more flexible than in English, we will use the term *SOV order* to refer to the word order in (2a), and *OSV order* for that in (2b).

- (2) a. SOV order  
       NP<sub>1</sub>   *ga* ... NP<sub>2</sub>    *ni/o* ... Verb (where NP<sub>1</sub> and NP<sub>2</sub> are clause-mates)  
               NOM               DAT/ACC  
 b. OSV order  
       NP<sub>2</sub>   *ni/o* ... NP<sub>1</sub>   *ga* ... Verb (where NP<sub>1</sub> and NP<sub>2</sub> are clause-mates)  
               DAT/ACC       NOM

The content of this chapter is organized as follows. Sections 2 and 3 summarize the study of quantifier scope in Japanese over the past 50 years. Section 2 describes a generalization on quantifier scope that emerged at an early stage and came to be accepted as the standard account, but was subsequently challenged. Based on further research, however, it came to light that what were believed to be counterexamples to the standard account were in fact better accounted for by an appeal to linguistic operations external to syntax, so the earlier generalization was in fact adequate so far as syntax is concerned. Once the involvement of extra-syntactic operations was acknowledged to be relevant to the interpretation of quantifier scope, it became apparent from the results of research up to that point that the semantic representation generated directly from the LF representation of a sentence would have to be underspecified in general.<sup>2</sup> The challenge to semantic theory that emerges from past research is therefore one of developing an adequate theory of underspecified semantic representation. After considering in Section 3 previous accounts of the standard generalization and showing them to be unviable, we respond to this challenge in Section 4 by introducing a theory based on the framework of Ueyama (2015) that makes possible such an underspecified semantic representation. Section 5 concludes the chapter with a brief summary.

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<sup>2</sup> *Generative grammar* assumes that each speaker possesses a computational system (often called syntax) in their mind, which takes as input a set of lexical items, and yields as output a pair of representations, one serving as the formal basis of meaning and the other as the formal basis of sound. The former is called the LF representation.

## 2 Establishing the generalization relevant to syntax

### 2.1 The emergence of the standard generalization

Early on in the tradition of generative grammar, Kuroda (1969/70) proposed (3) as a generalization regarding wide scope readings (square brackets indicate material inserted by the current authors).<sup>3</sup>

- (3) If a predicate corresponds to a sentence frame with the ‘preferred’ word order [i.e. SOV order], the semantic order of quantifiers is given by their linear order; if a predicate corresponds to a sentence frame with the ‘inverted’ word order [i.e. OSV order], the semantic order of quantifiers is ambiguous.

In other words, Kuroda maintains that (i) with SOV order, the reading where the quantifier corresponding to the subject takes wide scope with respect to the quantifier corresponding to the object (henceforth the S>O reading) is possible, but a reading with the reverse scope order (henceforth the O>S reading) is not, and (ii) with the OSV order, both readings are possible. In support of (3), Kuroda provides examples like those in (4). According to him, (4a) has the reading in (5a) but not that in (5b), while (4b) can be taken to mean either (5a) or (5b).

- (4) a. *Dareka ga daremo o aisi-tei-ru.*  
       someone NOM everyone ACC love-STAT-NPST  
       ‘Someone loves everyone.’  
       b. *Daremo o dareka ga aisi-tei-ru.*  
       everyone ACC someone NOM love-STAT-NPST
- (5) a. There is someone who loves everyone.  
       b. For each person, there is someone who loves him or her.

Hoji (1985) provides further evidence in support of Kuroda’s generalization, using various other types of nominal expressions involving conjunction, disjunction, and so-called focus-sensitive particles such as *dake* ‘only’ and *sae* ‘even’. According to Hoji (1985), (6a), for example, has the reading in (7a) but not that in (7b); by contrast, (6b) can have both readings.

<sup>3</sup> The statement in (3) is found in Chapter 2 of Kuroda (1992: 97), which is a reprint of Kuroda (1969/70).

- (6) a. (= Hoji 1985: 234 example [42a], slightly adapted)  
*[John ka Bill] ga [sake to biiru] o non-da (rasii).*  
 John or Bill NOM sake and beer ACC drink-PST seem  
 ‘(It seems that) [John or Bill] drank [sake and beer].’
- b. (= Hoji 1985: 242 example [62], slightly adapted)  
*[Sake to biiru] o [John ka Bill] ga non-da (rasii).*  
 sake and beer ACC John or Bill NOM drink-PST seem
- (7) a. There is a person, John or Bill, who drank both sake and beer.  
 b. For both sake and beer, there is a person, John or Bill, who drank it.

The Kuroda/Hoji generalization has been widely accepted in the field and has given rise to substantial research on the question of how OSV order is derived syntactically (cf. Harada 1977; Saito 1985; Hoji 1985).

## 2.2 A reexamination of the standard generalization

### 2.2.1 Stage 1: Kitagawa (1990), Kuno et al. (1999), and others

While the Kuroda/Hoji generalization continues to be standardly accepted in the field, it was challenged in part by a series of studies conducted in the 1990s. Kitagawa (1990), Kuno et al. (1999), Ueyama (1998, 2003), and Hayashishita (1999, 2000a) each argue that the O>S reading may be possible with SOV order as well. Kuroda and Hoji themselves also acknowledge this in their later work (see Kuroda 1994 and Hoji 2003). (8), for example, has SOV order but allows the O>S reading, i. e. the reading that for each athlete of ours, there is someone who is shadowing him or her.

- (8) (= Ueyama 2003: footnote 24 example (i), slightly adapted)  
*Dareka ga uti no subete no sensyu o*  
 someone NOM we GEN all GEN athlete ACC  
*bikoo-si-tei-ru (to-yuu-koto wa, zen'in ga kiken*  
 shadow-do-PROG-NPST NMLZ TOP everyone NOM danger  
*ni saras-are-tei-ru to-yuu-koto da.)*  
 DAT expose-PASS-RES-NPST NMLZ COP.NPST  
 ‘(The fact that) someone is shadowing every athlete of ours (means that everyone’s life is in danger.)’

### 2.2.2 Stage 2: Hayashishita (2000b, 2004, 2013)

The existence of examples like (8) might be taken as grounds for discarding the Kuroda/Hoji generalization. Whether or not this is the correct course of action to take depends, however, on what the full range of factors might be that contribute to sentence interpretation and what particular subset of such factors this generalization is meant to capture. The view that we endorse is that several readings may be associated with a given sentence, but it is possible for some of these to be attributed directly to the LF representation while others are not. We hold, in other words, that the semantic representations of certain readings are directly built based on the LF representation while those of others are not. To create semantic representations of the latter type requires an appeal to operations of an extra-syntactic kind, i. e., operations that occur apart from syntax.<sup>4</sup> Hayashishita (2000b, 2004, 2013) examines the nature of wide scope readings, and argues that certain wide scope readings including O>S readings in sentences with SOV order are of the latter type, and that if we limit our attention to readings of the former type, the Kuroda/Hoji generalization is correct. In other words, the Kuroda/Hoji generalization is something that the theory of syntax ought to account for.

Hayashishita (2004, 2013) argues that the semantic representation of the O>S reading in the case of SOV order is not one that builds directly upon an LF representation generated by the syntax. To that end, Hayashishita (2013) maintains (9).<sup>5</sup>

(9) (= Hayashishita 2013: example [17])

Inverse scope readings [i. e. O>S readings for SOV order] are possible under the following condition:

When the relevant object expression  $\alpha$  is interpreted, there is one and only one group of objects that can possibly be the extension of  $\alpha$ .

In support of this, Hayashishita (2004), for example, reports the fact that the first sentence of (10) gives rise to the O>S reading, but the first sentence of (11) does not, despite the fact that in both cases the relevant object expression is a bare numeral *hutari no NP* ‘two NPs’.

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<sup>4</sup> This view was originally put forth in Hoji (1998), which shows that some instances of so-called sloppy readings (with regards to pronouns) emerge directly from LF representations while others do not.

<sup>5</sup> Based on Ueyama (1998: Appendix D), Hayashishita (2004: 12-19) argues that the reading under discussion is possible only if the relevant object expression refers to a specific group the speaker has in mind, but Hayashishita (2013: 38-40) shows that this condition is too strong.



- (10) (Based on Hayashishita 2004: Ch.2 example [14a])

*Gakubunaisenkyo de, suunin no gakusei ga hutari no*  
 department.election LOC several GEN student NOM two GEN  
*kyoozyu ni toohyoo-si-ta. Demo hoka no kyoozyu ni wa*  
 professor DAT vote-do-PST but other GEN professor DAT TOP  
*daremo toohyoo-si-na-katta.*  
 no.one vote-do-NEG-PST

'In the departmental election, several students voted for two professors. But no one voted for the other professors.'

- (11) (Based on Hayashishita 2004: Ch.2 example [15a])

*USC de wa maitosi suunin no kyoozyu ga hutari no*  
 USC LOC TOP every.year several GEN professor NOM two GEN  
*sinnyuusei o zimbunkagakusyoo ni suisen-su-ru koto ni*  
 new.student ACC humanities.award DAT nominate-do-NPST NMLZ DAT  
*nat-tei-ru. Demo kotosi wa daremo*  
 become-RES-NPST but this.year TOP no.one  
*suisen-sare-na-katta.*  
 nominate-PASS-NEG-PST

'At USC, each year several professors nominate two freshmen for the humanities award. But no student was nominated this year.'

The first sentence of (10) is compatible with a situation where there are two professors who received votes from several students. By contrast, (11) cannot depict a situation where for each year, there are two freshmen who receive votes from several professors. As we can see, the contrast between (10) and (11) is in accordance with (9). In processing (10), the speaker can, and in fact must in this situation, associate the relevant object expression with one and only one group of two professors. But this is not possible in (11); since the extension of *sinnyuusei* 'freshmen' changes every year, the speaker has no way of associating the object expression with one and only one group of individuals. It is important to note that Hayashishita's observation is independent of our knowledge of the world; it implies that unless the condition in (9) is satisfied, the reading under discussion does not emerge, even if the reading may be compatible with our knowledge of the world.

Certain nominal expressions have a large number of candidates for their extension. Given (9), we would expect that the O>S reading would be difficult to detect in SOV sentences taking such expressions as their object. An example of such an expression is *X izyoo no NP* 'X or more NP'. As expected, (12) can be taken to mean (13a), but cannot be understood to express (13b).

- (12) 30% no ginkoo ga 10 izyoo no kaisya ni  
 30% GEN bank NOM 10 or.more GEN company DAT  
*huseina kasituke o syoonin-si-tei-ru.*  
 illegal loan ACC approve-do-RES-NPST  
 '30 % of the banks have approved illegal loans to 10 or more companies.'
- (13) a. There is a group of banks constituting 30 % of the total number of banks under consideration such that for each of them, there are 10 or more companies that it has approved illegal loans to.
- b. There are 10 or more companies such that for each of them, there is a group of banks constituting 30 % of the total number of banks under consideration that have approved illegal loans to it.

Among nominal expressions that support the O>S reading in SOV order are expressions whose lexical specification allows more than one group of objects to be in the extension, and thus do not meet the condition in (9), based on their lexical specification alone.<sup>6</sup> *Hutari no NP* 'two NPs' is one such case. What we have seen above in (10) and (11) is that *hutari no NP* 'two NPs' may or may not meet the condition in (9) depending on the content of the world under discussion. Since LF representations are solely the output of syntactic operations applying to the lexical specification of the participating items, if the semantic representation of a reading  $\alpha$  were directly yielded from the LF representation, the availability of  $\alpha$  would not be subject to the condition in (9). We are thus led to conclude that for SOV order, the syntax does not generate the LF representation that directly yields the semantic representation of the O>S reading. It follows that there must be some extra-syntactic operation actively contributing to the emergence of the O>S reading for SOV order.

It is important to note that for OSV order, by contrast with SOV order, the O>S reading emerges even when the condition in (9) is not met. Note, for example, that the first sentence in (14) is understood to mean that for each year, there are two freshmen who are voted to receive the humanities award by some professors, and (15), likewise, has the reading in (13b).

- (14) USC de wa maitosi hutari no sinnyuusei o suunin  
 USC LOC TOP every.year two GEN new.student ACC several  
*no kyoozyu ga zimbunkagakusyoo ni suisen-su-ru*  
 GEN professor NOM humanities.award DAT nominate-do-NPST

<sup>6</sup> See Hayashishita & Ueyama (2012), for discussion of a variety of nominal expressions involving a quantity expression in Japanese.

*koto ni nat-tei-ru. Demo kotosi wa daremo*  
 NMLZ DAT become-RES-NPST but this.year TOP no.one  
*suisen-sare-na-katta.* (Cf. (11).)

nominate-do.PASS-NEG-PST

‘At USC, each year several professors nominate two freshmen for the humanities award. But no student was nominated this year.’

- (15) *10 izyoo no kaisya ni 30% no ginkoo ga*  
 10 or.more GEN company DAT 30% GEN bank NOM  
*huseina kasituke o syoonin-si-tei-ru.* (Cf. (12).)

illegal loan ACC approve-do-RES-NPST

‘30 % of the banks have approved illegal loans to 10 or more companies.’

This suggests that for OSV order, the semantic representation of the O>S reading is based directly on the LF representation generated by the syntax.

Similarly, the availability of the S>O reading in SOV order does not depend on any condition corresponding to (9) that there be one and only one group of objects that can possibly be in the extension of the subject. For instance, in (16) the value of *hutari no sinnin kyooiin* ‘two newly hired professors’ changes every year, but (16) can be taken to mean that for each year, there are two newly hired professors who vote for several students to receive the humanities award.

- (16) *USC de wa, maitosi hutari no sinnin kyooiin ga*  
 USC LOC TOP every.year two GEN newly:hired teacher NOM  
*suunin no gakusei o zimbunkagakusyoo ni suisen-su-ru.*  
 several GEN student ACC humanities.award DAT nominate-do-NPST  
 ‘At USC, each year two newly hired professors nominate several students for the humanities award.’

This suggests that for SOV order, the syntax generates the LF representation that directly yields the semantic representation of the S>O reading.

Another piece of evidence Hayashishita (2004, 2013) puts forward for the thesis that for SOV order, syntax does not generate the LF representation that directly yields the semantic representation of the O>S reading is what he calls *freezing effects*. Hayashishita (2004, 2013) observes that when the O>S reading obtains in SOV order, certain interpretations that are normally available for the subject (the nominal expression taking narrow scope) are *frozen* (i. e. blocked).

For example, (17a) is open to a reading where the direct object takes wide scope with respect to the subject, and (17b) to a reading where the subject takes wide scope with respect to the indirect object.

- (17) a. (Based on Hayashishita 2004: Ch.2 example [20])  
*Sannin no kyoozyu ga rei no hutari no gakusei*  
 three GEN professor NOM the GEN two GEN student  
*o kaisya ni suisen-si-ta.*  
 ACC company DAT recommend-do-PST  
 'Three professors recommended the two students under discussion to companies.'
- b. (Based on Hayashishita 2004: Ch.2 example [21])  
*Sannin no kyoozyu ga John o hutatu no kaisya*  
 three GEN professor NOM John ACC two GEN company  
*ni suisen-si-ta.*  
 DAT recommend-do-PST  
 'Three professors recommended John to two companies.'

However, the two wide scope readings, which we have just observed in isolation, cannot co-occur in the same clause. In (18), when the direct object takes wide scope with respect to the subject, the latter cannot take wide scope with respect to the indirect object, and conversely, when the subject takes wide scope with respect to the indirect object, the direct object cannot take wide scope with respect to the subject.

- (18) (Based on Hayashishita 2004: Ch.2 example [22])  
*Sannin no kyoozyu ga rei no hutari no gakusei*  
 three GEN professor NOM the GEN two GEN student  
*o hutatu no kaisya ni suisen-si-ta.*  
 ACC two GEN company DAT recommend-do-PST  
 'Three professors recommended the two students under discussion to two companies.'

When the direct object takes wide scope with respect to the subject, the available reading is not (19a), but (19b).

- (19) a. For each of the two students under discussion, there are three professors such that each of the professors recommended him or her to two companies.
- b. For each of the two students under discussion, there are three professors and two companies such that each of the professors recommended him or her to some of the companies, and to each of the companies some of the professors recommended him or her.

The fact that (18) cannot give rise to (19a) is significant in view of the fact that the reading itself is possible with the OSV order counterpart. The interpretation in (19a) is available, for example, in an OSV sentence such as (20).

- (20) *Rei no hutari no gakusei o sannin no kyoozyu ga*  
 the GEN two GEN student ACC three GEN professor NOM  
*hutatu no kaisya ni suisen-si-ta.*  
 two GEN company DAT recommend-do-PST  
 ‘Three professors recommended the two students under discussion to two companies.’

In other words, when the O>S reading obtains in OSV order, freezing effects are not observed with the subject (i. e. the nominal expression taking narrow scope).

Neither does the S>O reading in SOV order induce freezing effects with respect to the object (i. e. the nominal expression taking narrow scope). For example, (21) can be taken to mean (22), i. e. when the subject takes wide scope with respect to the indirect object, the latter can in turn take wide scope with respect to the direct object.

- (21) (= Hayashishita 2004: Ch.2 example [33], slightly adapted)  
*Maitosi takusan no kyoozyu ga gonin no gakusei*  
 every.year many GEN professor NOM five GEN student  
*ni hutatu no kaisya o suisen-su-ru.*  
 DAT two GEN company ACC recommend-do-NPST  
 ‘Each year, many professors recommend two companies to five students.’

- (22) Each year, there are many professors such that for each of them, there are five students to each of whom he or she recommends two companies.

If the O>S reading for the SOV order were generated directly from syntax in the same way as the O>S reading for the OSV order and the S>O reading for the SOV order, freezing effects would not be expected. We take this as further evidence for the conclusion stated above that in SOV order, the semantic representation of the O>S reading is not directly based on the LF representation generated by the syntax.

Hayashishita (2000b) shows that the S>O reading in OSV order has the same characteristics as the S>O reading in SOV order and the O>S reading in OSV order. Thus, the generalization relevant to syntax turns out to be (23), corresponding to the claim initially made by Kuroda and Hoji.

- (23) The generalization relevant to syntax  
 a. SOV order gives rise to the S>O reading, but not the O>S reading.  
 b. OSV order gives rise to both the S>O reading and the O>S reading.

### 3 Previous attempts to account for the standard generalization

As discussed in the previous section, we understand the standard generalization as originally put forth by Kuroda and Hoji to be correct insofar as syntax is concerned. A notable attempt to restrict syntax to account for this was made by Hoji (1985). As Hoji's account is based on the standard account for wide scope readings in English, we will briefly introduce the latter here.

For English, it was once claimed in works such as Chomsky (1957) and Reinhart (1976) that a sentence containing two nominal quantity expressions as subject and object (e.g. (24)) gives rise only to the S>O reading, such as in (25a), but this was widely challenged and it became commonly accepted that the O>S reading, such as in (25b), is also possible (see Katz & Postal 1964 and May 1977, among others).

(24) *Some boy loves every girl.*

- (25) a. There is some boy such that he loves every girl.  
b. For each girl, there is some boy who loves her.

What has been assumed, crucially, is that the wide scope readings in question, such as (25a) and (25b) for (24), are both generated directly by the syntax. In other words, the syntax generates the LF representations that directly yield the semantic representations of those readings. This assumption has prompted researchers to adopt two additional assumptions. First, nominal expressions like *some boy* and *every girl* are analyzed as *generalized quantifiers* (= GQ) in the sense of Barwise & Cooper (1981), as represented in (26).

- (26) a.  $\llbracket \text{some boy} \rrbracket = \lambda P \in D_{\langle e, t \rangle} \exists x (\text{boy}(x)) P(x)$   
b.  $\llbracket \text{every girl} \rrbracket = \lambda P \in D_{\langle e, t \rangle} \forall x (\text{girl}(x)) P(x)$

In order to ensure that semantic composition yields a correct outcome, these expressions must be combined with an element of type  $\langle e, t \rangle^7$ , and this in turn requires a second assumption. The nominal expressions in question must undergo syntactic movement so that they adjoin to a higher node of the correct type, an operation known as *quantifier raising* (May 1977). It is assumed that when (24) gives rise to the

<sup>7</sup> In Montague Grammar, sentence constituents are described in terms of semantic types. An expression denoting a proposition (e.g. a sentence) is type  $t$  and an expression denoting an individual (e.g. the man) is type  $e$ , and other expressions are described in various combinations of  $t$  and  $e$ . For example, a verb phrase (without the subject) is understood as an expression that becomes a proposition after being combined with an individual, and thus of type  $\langle e, t \rangle$ .

reading in (25a), it is represented as (27a) at LF, and when it is associated with the reading in (25b), it is represented as (27b) at LF.

- (27) a. [some boy<sub>i</sub> [every girl<sub>j</sub> [t<sub>i</sub> loves t<sub>j</sub>]]]  
 b. [every girl<sub>j</sub> [some boy<sub>i</sub> [t<sub>i</sub> loves t<sub>j</sub>]]]

Capitalizing on the treatment of simple cases like the one just illustrated, it has generally been assumed that wide scope readings are all generated directly by the syntax. Analyzing nominal expressions containing a quantity expression as GQs and assuming that they undergo quantifier raising has become the standard practice in the linguistic study of quantifier scope, not only for English but also other languages, including Japanese.<sup>8</sup> Hoji's (1985) account for the standard generalization in Japanese follows this tradition.

Hoji (1985) first assumes without argument that prior to quantifier raising, the subject is located higher than its clause-mate object. Second, he adopts the Scope Interpretation Hypothesis in (28).<sup>9</sup>

- (28) (= Hoji 1985: 248, example [76])  
 at LF  
 $*QP_i \quad QP_j \quad t_j \quad t_i$   
 where each member c-commands the member to its right

The constraint in (28) makes the LF representation in (29a) well-formed but that in (29b) ill-formed, so that SOV order generates the S>O reading but not the O>S reading.

- (29) For SOV order:  
 a. [Subj<sub>i</sub> [Obj<sub>j</sub> [ t<sub>i</sub> t<sub>j</sub> Verb]]]  
 b.  $*[Obj_j [Subj_i [ t_i t_j Verb]]]$

<sup>8</sup> Following the standard approach just illustrated, we can also assume that the scope of a given nominal expression containing a quantity expression is its c-commanding domain at LF (cf. May 1977, Huang 1982). This assumption has been important for those who have used quantifier scope as a means to investigate the LF representations of sentences.

<sup>9</sup> Earlier versions of (28) were proposed in Reinhart (1976) and Huang (1982); see (i) and (ii).

(i) (= Reinhart 1976: 191 example [39])

A logical structure in which a quantifier binding a variable *x* has wide scope over a quantifier binding a (distinct) variable *y* is a possible interpretation for a given sentence *S* just in case in the surface structure of *S* the quantified expression corresponding to *y* is in the (c-command) domain of the quantified expression corresponding to *x*.

(ii) The General Condition on Scope Interpretation (= Huang 1982: 220 example [70])

Suppose *A* and *B* are both QPs or both Q-NPs or Q-expressions, then if *A* c-commands *B* at SS, *A* also c-commands *B* at LF.

To ensure that the syntax generates LF representations of the S>O reading and the O>S reading for OSV order, Hoji (1985) additionally assumes that (i) OSV order is derived from SOV order by moving the object to a position higher than the subject, (ii) the object in OSV order further undergoes quantifier raising (from the dislocated position, which is higher than the subject), and (iii) the trace of the quantifier raising in (ii) can optionally be deleted because it is not subcategorized.<sup>10</sup> These additional assumptions allow OSV order to be associated with two distinct LF representations, (30a) and (30b), giving rise to the S>O reading and the O>S reading, respectively.

- (30) For OSV order:
- a. [Subj<sub>i</sub> [Obj<sub>j</sub> [    t<sub>i</sub> t<sub>j</sub> V]]]] (with deletion of the intermediate trace t<sub>j</sub>)
  - b. [Obj<sub>j</sub> [Subj<sub>i</sub> [t<sub>i</sub> [    t<sub>i</sub> t<sub>j</sub> V]]]] (without deletion)

As we can see, the viability of this account depends on how plausible (28) is. However, (28) is conceptually unappealing in that it requires the paths drawn by two instances of syntactic movement to intersect with each other, something that has been shown in the case of other syntactic phenomena to result in uninterpretability.<sup>11</sup> For example, when two instances of *wh*-movement, a prototypical variety of syntactic movement, intersect in their paths of movement, the sentence becomes unacceptable. This can be seen in (31b), (31d), and (31f), in comparison with (31a), (31c), and (31e), respectively.

- (31) (Taken from Pesetsky 1982: 267-268)
- a. *What subject<sub>i</sub> do you know [who<sub>j</sub> to talk to t<sub>j</sub> about t<sub>i</sub>]?\**
  - b. *\*Who<sub>j</sub> do you know [what subject<sub>i</sub> to talk to t<sub>j</sub> about t<sub>i</sub>]?\**
  - c. *Who<sub>j</sub> do you know [what subject<sub>i</sub> to talk about t<sub>i</sub> to t<sub>j</sub>]?\**
  - d. *\*What subject<sub>i</sub> do you know [who<sub>j</sub> to talk about t<sub>i</sub> to t<sub>j</sub>]?\**
  - e. *What books<sub>i</sub> do you know [who<sub>j</sub> to persuade t<sub>j</sub> to read t<sub>i</sub>]?\**
  - f. *\*Who<sub>j</sub> do you know [what books<sub>i</sub> to persuade t<sub>j</sub> to read t<sub>i</sub>]?\**

Hoji's attempt to account for the standard generalization based on the hypothesis in (28) is thus not promising.

<sup>10</sup> "B is subcategorized by A" means that A selects B as an argument. It has been assumed that a subcategorized position must be maintained under various syntactic operations so that theta-role assignment can be accomplished successfully. The logic adopted here is that since the landing site of quantifier raising is not a position so selected as an argument, the position need not be maintained and is hence deletable. This conception of the deletability of traces originates in Lasnik & Saito (1984), although Hoji (1985: 251) credits Joseph Emonds for suggesting this idea to him in personal communication.

<sup>11</sup> Hoji (1985: 297-299) mentions in Footnote 25 of Chapter 4 possible conceptual implications that this formulation has for the Nested Dependency Condition.



## 4 Towards a comprehensive theory of quantifier scope in Japanese

It is fair to say that past studies of quantifier scope in Japanese have considered the data carefully, recognized the possible involvement of extra-syntactic operations in addition to syntax, and provided a solid foundation for the standard generalization relevant to syntax, but have not made much progress in constructing a comprehensive theory that adequately describes sentence interpretation involving quantifier scope in general or in proposing a syntactic framework that is itself sufficiently restricted to account for the standard generalization. Our next step is thus to construct such a comprehensive theory of sentence interpretation. To this end, we introduce in this section such a theory, drawing on the theoretical framework of Ueyama (2015).

### 4.1 The need for a theory of underspecified semantic representation

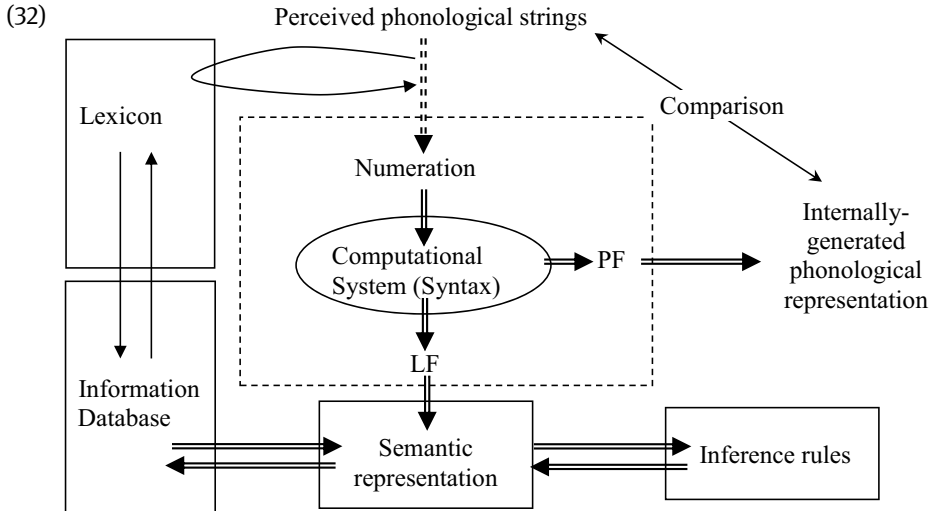
One of the central goals of linguistics is to describe how speakers associate sentence structure with meaning, i.e. how they associate the phonological representation of a sentence with its semantic representation. Building a comprehensive theory of sentence interpretation involving quantifier scope in Japanese is one subpart of this overall project. This overall project subsumes inquiries into other subsidiary questions such as the relationship between PF and LF representations at the output of syntax and their relationship to phonological and semantic representations corresponding to them, which are assumed to exist independently of syntax. Whether phonological and semantic representations are necessary in addition to PF and LF representations, respectively, is itself an important question, the answer to which will dictate what kind of model of sentence interpretation is adopted.

Previous studies of sentence interpretation involving quantifier scope in Japanese, summarized in the previous sections, have important implications for understanding the relation between LF representation and semantic representation. In our discussion of the standard generalization on quantifier scope in Japanese in Section 2.2, we saw the distinction observed by Hayashishita (2004, 2013) between certain instances of association between phonological and semantic representation that may be accounted for directly by syntax and others, including the O>S reading in SOV order, that crucially involve the contribution of extra-syntactic operations apart from syntax. This observation has two implications.

First, it requires that a level of semantic representation be recognized additional to LF representation. Second, the semantic representation based directly on the LF representation needs to be underspecified in such a way as to make it possible for relevant extra-syntactic operations to convert it into the kind of semantic representa-

tion capable of accounting for the O>S reading in SOV order. In the following, we will introduce a theory that makes possible a semantic representation based on LF representation that is underspecified in this way.

As a general model of sentence interpretation within which to situate our theory, we will adopt the model diagramed in (32).



To interpret a given string of sounds corresponding to a sentence, a hearer must first ‘guess’ the content of the Numeration (i.e. a set of lexical items chosen as the input to the computational system) from the string of sounds she hears.<sup>12</sup> This is indicated by the arrow in (32) from *Perceived phonological strings* to *Numeration*. Taking this Numeration as input, the syntax then automatically generates PF and LF representations. The phonological representation constructed from the PF representation is compared with the perceived phonological string, providing confirmation to the speaker that the Numeration initially formed is a viable option. Semantic representations directly created from LF representations are generally underspecified, and they are automatically enriched through inference computation in order to make sense.<sup>13</sup> The arrows between *Semantic Representation* and *Inference rules* are meant to indicate

<sup>12</sup> We assume this for cases where the speaker attempts to interpret a given sentence based on the meaning of each constituent lexical item. We acknowledge that in everyday communication, the speaker may have stored in her memory a set of fixed phrases consisting of more than one lexical item, whose semantic composition she may not necessarily process in the course of interpreting a given sentence.

<sup>13</sup> Enrichment by inference computation is a process that takes place automatically for both semantic representations directly created from LF representations and those involving extra-syntactic operations.

this process. Finally, the *Information Database* may be understood as representing the speaker's knowledge about the world, and the resulting semantic representation interacts with it as well.

## 4.2 A viable theory of semantic representation

We have at several points so far noted how the observations made in Hayashishita (2004, 2013) show that the syntax does not generate the LF representation that directly yields the semantic representation of the O>S reading for SOV order. Thus, the semantic representation based directly on the LF representation in (33), for example, cannot be something like (34).

- (33) *Sannin no gakusei ga hutari no kyoozyu ni toohyoo-si-ta.*  
 three GEN student NOM two GEN professor DAT vote-do-PST  
 'Three students voted for two professors.'

- (34)  $\exists Y (Y \subseteq \text{professor} \wedge |Y| = 2) \forall y (y \in Y) \exists X (X \subseteq \text{student} \wedge |X| = 3) \forall x (x \in X)$   
 [x voted for y]

Let us consider here what form the semantic representation directly based on the LF representation would have to take in cases such as (33) for the O>S reading to obtain. Given that the syntax generates an LF representation adequate to account for the S>O reading in SOV order, one might take the position that scope order in the semantic representation directly created from the LF representation mirrors the surface word order of the sentence. For example, one might assume that the semantic representation directly created from the LF representation of (33) is (35) or (36), depending on how the relevant nominal expressions are analyzed. ( $\sqcup$  in (36) is Link's (1983) sum-formation operator, which forms a sum individual from the members of a set.)

- (35)  $\exists X (X \subseteq \text{student} \wedge |X| = 3) \forall x (x \in X) \exists Y (Y \subseteq \text{professor} \wedge |Y| = 2) \forall y (y \in Y)$   
 [x voted for y]
- (36)  $\exists x (\exists X X \subseteq \text{student} \wedge |X| = 3: x = \sqcup X) \exists y (\exists Y Y \subseteq \text{professor} \wedge |Y| = 2: y = \sqcup Y)$   
 [x voted for y]

(35) and (36), however, represent the S>O reading and the so-called collective reading, respectively; thus, they are articulated in too detailed a fashion to leave room to be converted to a representation of the O>S reading.

If a single proposition contains two quantifiers, a scope order is inevitably created. So it is impossible to avoid the problem of over-articulation such as we have just observed so long as we assume that the semantic representation directly created

from the LF representation of a sentence is a single proposition. To allow the semantic representation directly created from the LF representation of a given sentence to be underspecified, we must therefore abandon the assumption that it is a single proposition, and consider the possibility that it consists of multiple parts. Intuitively, we would like to say that the semantic representation of (33) consists of three parts, (i) (37a), (ii) (37b-i) or (37b-ii), and (iii) (37c-i) or (37c-ii), with the free variables controlled in a relevant way.

- (37) a.  $\exists x \exists y (x \text{ voted for } y)$
- b. (i)  $\exists X (X \subseteq \text{student} \wedge |X| = 3) \forall x (x \in X) [x \text{ voted for } y]$   
 (ii)  $\exists x (\exists X X \subseteq \text{student} \wedge |X| = 3: x = \sqcup X) [x \text{ voted for } y]$
- c. (i)  $\exists Y (Y \subseteq \text{professor} \wedge |Y| = 2) \forall y (y \in Y) [x \text{ voted for } y]$   
 (ii)  $\exists y (\exists Y Y \subseteq \text{professor} \wedge |Y| = 2: y = \sqcup Y) [x \text{ voted for } y]$

We may then understand the S>O reading as emerging when (37a), (37b-i), and (37c-ii) are selected as the semantic representation (with the stipulation that  $x$  in (37c-ii) be the same as  $x$  in (37b-i) and  $y$  in (37b-i) the same as  $y$  in (37c-ii)). Similarly, the O>S reading is understood to emerge when (37a), (37b-ii), and (37c-i) are selected (with the free variables similarly controlled in the relevant way). The present idea thus involves no scope order between the subject and object nominal expressions, and how those nominal expressions are represented remains underspecified. If we could devise a theory that incorporates the present idea, we would also have a way to capture the asymmetry between the S>O and the O>S readings in SOV order. It would then be possible to say that the syntax can select the combination of (37a), (37b-i), and (37c-ii) but not that of (37a), (37b-ii), and (37c-i). To achieve the latter combination would require an extra-syntactic operation.

Pursuing the present idea formally, however, requires that nominal expressions involving a quantity expression be expressed in some way other than as quantifiers. If the semantic representation directly created from the LF representation of a given sentence is to consist of multiple parts, as we propose, and nominal expressions are permitted to be expressed as quantifiers, then free variables would necessarily be included. But controlling those free variables in the way we require (e.g. making  $x$  in (37c-ii) the same as  $x$  in (37b-i), and  $y$  in (37b-i) the same as  $y$  in (37c-ii)) is not possible. In the theory introduced below, therefore, nominal expressions involving a quantity expression are not represented as quantifiers.

Main stream theories are for the most part incapable of incorporating the idea just presented. Montague Semantics (Montague 1973, Dowty 1979, Dowty et al. 1981) and Categorical Grammar (Steedman 1996, 2000) are at their core similar to the standard treatment sketched in Section 3 in that they assume that the semantic representation created directly from LF representation is a single proposition, and the relevant nominal expressions are quantifiers, so that the semantic representations they adopt

turn out to be overly articulated and unable to incorporate this idea. Discourse Representation Theory (Kamp & Reyle 1993, Heim 1982) does assume that the relevant semantic representation consists of multiple parts, but it is not flexible enough to express the underspecification our data demand. Head-driven Phrase Structure Grammar (HPSG) (Pollard & Sag 1987, 1994, Sag et al. 2003) appears to be a viable option but is unsuitable for our purposes for the following reasons. First, we would like to assume that the rules of syntax both combine semantic features of lexical items to build semantic representations and combine phonological features of lexical items to build phonological representations. As the theory of HPSG now stands, it is not clear how semantic and phonological representations can be generated independently of each other. Second, HPSG is basically developed from a grammar with phrase structure rules (Chomsky 1965), suited better to describing “rigid” word-order languages like English than “free” word-order languages like Japanese. For the purposes of describing Japanese, we find Merge-based grammar (Chomsky 1995) to be a more suitable option, and will thus adopt a version of Merge that allows the incorporation of semantic and phonological features.

The theory we adopt here is one couched in the theoretical framework developed in Ueyama (2015). Humans use natural language to talk about how they understand the world they are in and what they know about it. We understand one of the main functions of language to be that of creating semantic representations, and in describing one’s belief about the world, one relates these to objects in the world, which in our model of sentence interpretation (schematized in (32)) are represented in the speaker’s Information Database. We assume that the speaker’s Information Database and semantic representations are both made up of sets of objects, so that semantic representations are not individual propositions as they are traditionally understood to be. To differentiate objects making up semantic representations from those in the Information Database, we refer to the former as OBJECTs. We assume that an OBJECT consists of an identifying (id) index and a set of properties, where a property is a pair consisting of an attribute and a value. Each OBJECT is associated with a different id index, which allows it to be related to an object in the speaker’s Information Database.

We now present a step-by-step explanation of how the syntax builds a semantic representation (i.e. a set of OBJECTs) from the Lexicon, presenting first a simplified version in this section to highlight the main features of our theory, followed by a more articulated version in Section 4.3, where we introduce our formal definition of OBJECT and describe how the syntax generates wide scope readings. We assume that the Lexicon is organized as in (38) and use the format in (39) to describe individual lexical items.

- (38) a. A Lexicon is a set of lexical items.  
 b. A lexical item is a bundle of (i), (ii), and (iii).  
 (i) a set of syntactic features,  
 (ii) a pair of an id-slot and a set of properties, where a property is a pair consisting of an attribute and a value, and  
 (iii) a phonological form.
- (39) [{syntactic features, ...}, <id-slot, {properties, ...}>, phonological form]

Focusing on the part of the Lexicon that is relevant to semantic representations, each lexical item can be understood to correspond to a set of properties. For example, *John* is understood to correspond to {<Name, John>}, *kawaii* ‘pretty’ to {<Appearance, pretty>}, *onnanoko* ‘girl’ to {<Kind, girl>}, *sasow* ‘to invite’ to {<Kind, invite>, <Theme, \_\_>, <Agent, \_\_>}, and *ta* (a tense marker) to {<Time, past>}. We assume that quantity expressions also correspond to sets of properties. In other words, they are not quantifiers in the sense of first order logic. *Sannin* and *hutari*, for example, correspond to {<Quantity, three>} and {<Quantity, two>}, respectively. Here we leave open the question of exactly how many properties each lexical item corresponds to and how each property is described, assuming without argument that these are determined by the relevant language community, and may be different depending on the language community.

In order to generate a sentence, the relevant lexical items are selected to form a Numeration. For example, to generate the sentence in (40), the lexical items in (41) are selected (leaving aside here the question of how particles such as *no*, *ga*, and *o* are to be treated.)

- (40) *Sannin no otokonoko ga hutari no onnanoko o*  
 three GEN boy NOM two GEN girl ACC  
*oikake-tei-ta.*  
 chase-PROG-PST  
 ‘Three boys were chasing two girls.’

- (41) [{N}, <★, {<Quantity, three>}>, sannin]  
 [{N}, <id, {<Kind, boy>}>, otokonoko]  
 [{N}, <★, {<Quantity, two>}>, hutari]  
 [{N}, <id, {<Kind, girl>}>, onnanoko]  
 [{V}, <id, {<Kind, chase>, <Theme, ★<sub>[+wo]</sub>>, <Agent, ★<sub>[+ga]</sub>>}>, oikake]  
 [{T}, {<★, {<Time, progressive past>}>, <id, {<Predicate, ★>, <Subject, ★>}>}, -teita]

Some lexical items (e.g. *otokonoko*, *onnanoko*, *oikake*) have *id* in the *id*-slot, and others (e.g. *sannin*, *hutari*, *-teita*) have ★, which is to be replaced with some index as a byproduct of Merge. This distinction is made in the Lexicon to indicate that the former items, used in isolation, correspond to objects in the speaker's Information Database while the latter items do not. Tenses have <*id*, {<*Predicate*, ★>, <*Subject*, ☆>}> as part of their semantic features.<sup>14</sup> This semantic feature functions to divide a given sentence into two parts, Subject and Predicate, a feature that will be instrumental in generating wide scope readings, as we will see below.

In the process of forming a Numeration, the two operations in (42) take place. In the case of (40), the Numeration in (43) is formed from (41).

- (42) a. Each selected lexical item is assigned an index.  
 b. If a lexical item has *id* in the *id*-slot, the assigned index replaces it.
- (43) Numeration  
 {<**x1**, [{N}, <★, {<*Quantity*, three>}>, sannin]>,  
 <**x2**, [{N}, <**x2**, {<*Kind*, boy>}>, otokonoko]>,  
 <**x3**, [{N}, <★, {<*Quantity*, two>}>, hutari]>,  
 <**x4**, [{N}, <**x4**, {<*Kind*, girl>}>, onnanoko]>,  
 <**x5**, [{V}, <**x5**, {<*Kind*, chase>, <*Theme*, ★<sub>[+wo]</sub>>, <*Agent*, ★<sub>[+ga]</sub>>}>, oikake]>,  
 <**x6**, [{T}, <★, {<*Time*, progressive past>}>, <**x6**, {<*Predicate*, ★>,  
 <*Subject*, ☆>}>], -teita,]>}

The syntax combines the items in the Numeration via Merge as in (44).<sup>15</sup>

- (44) Step 1: Take two lexical items **xn** and **xm** from Merge Base, where Merge Base is a work place whose initial stage is the Numeration.

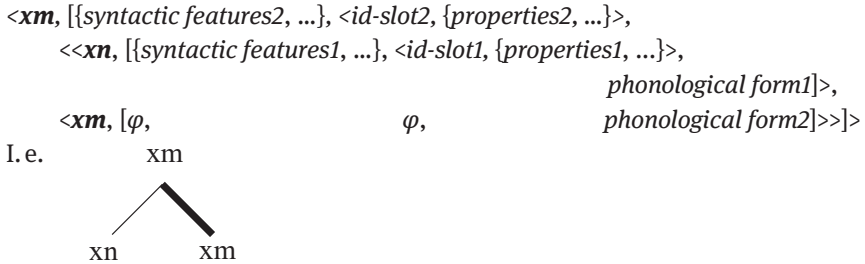
<**xn**, [{syntactic features1, ...}, <*id-slot1*, {properties1, ...}>, phonological form1]>  
 <**xm**, [{syntactic features2, ...}, <*id-slot2*, {properties2, ...}>, phonological form2]>

<sup>14</sup> While ★ is replaced by an index at the first application of Merge, ☆ waits for the second application of Merge to be replaced.

<sup>15</sup> Head-initial languages may include the operation in (i).

(i) <**xn**, [{syntactic features1, ...}, <*id-slot1*, {properties1, ...}>],  
 <<**xn**, [φ, φ, phonological form1]>,  
 <**xm**, [{syntactic features2, ...}, <*id-slot2*, {properties2, ...}>, phonological form2]>>>

Step 2: Create the following product and place it in Merge Base.<sup>16</sup>



Step 3: Repeat Step 1 and Step 2 until no further application can apply.

In Step 2, the resulting item inherits the syntactic and semantic features of one of the two parts. The part whose syntactic and semantic features are inherited by the resulting item is called the *head*. Although we do not spell out the details here, we assume that syntactic features include uninterpretable features, and that the operation Merge needs to be motivated by those features, that is, Merge takes place in order to erase them.

In generating the sentence in (40), for example, the process in (44) builds the structure in (45), which we represent as a tree so as to highlight the steps of the combining process.<sup>17</sup> This is the LF representation.

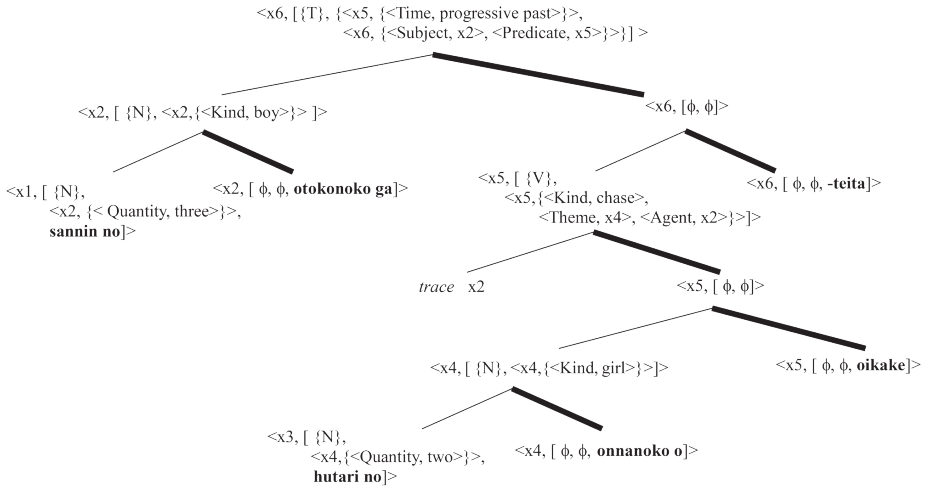
<sup>16</sup>  $\varphi$  is a 'trace' of feature percolation.

<sup>17</sup> The bracketing used in this tree is not strictly speaking correct. This is intentional so as to make the tree esthetically presentable. A more accurate representation is given in (i).

(i)  $\langle \mathbf{x6}, [\{\mathbf{T}\}, \langle \mathbf{x5}, \langle \text{Time, progressive past} \rangle \rangle, \langle \mathbf{x6}, \langle \text{Subject, } \mathbf{x2} \rangle, \langle \text{Predicate, } \mathbf{x5} \rangle \rangle] \rangle, \langle \mathbf{x2}, [\{\mathbf{N}\}, \langle \mathbf{x2}, \langle \text{Kind, boy} \rangle \rangle, \langle \mathbf{x1}, [\{\mathbf{N}\}, \langle \mathbf{x2}, \langle \text{Quantity, three} \rangle \rangle, \text{sannin no}] \rangle, \langle \mathbf{x2}, [\varphi \quad \varphi \quad \text{otokonoko ga}] \rangle] \rangle \langle \mathbf{x6}, [\varphi \quad \varphi \quad \langle \mathbf{x5}, [\{\mathbf{V}\}, \langle \mathbf{x5}, \langle \text{Kind, chase} \rangle, \langle \text{Theme, } \mathbf{x4} \rangle, \langle \text{Agent, } \mathbf{x2} \rangle] \rangle, \langle \rangle, \langle \mathbf{x5}, [\varphi \quad \varphi \quad \langle \mathbf{x4}, [\{\mathbf{N}\}, \langle \mathbf{x4}, \langle \text{Kind, girl} \rangle] \rangle, \langle \mathbf{x3}, [\{\mathbf{N}\}, \langle \mathbf{x4}, \langle \text{Quantity, two} \rangle] \rangle, \text{hutari no}], \langle \mathbf{x4}, [\varphi \quad \varphi \quad \text{onnanoko o}] \rangle] \rangle \langle \mathbf{x5}, [\varphi \quad \varphi \quad \text{oikake}] \rangle] \rangle] \rangle \langle \mathbf{x6}, [\varphi \quad \varphi \quad \text{-teita}] \rangle] \rangle] \rangle$



(45)



As can be seen here, at this point, all instances of ★ have been replaced with an index. <x6, {<Subject, x2>, <Predicate, x5>}> indicates that a Predication relation is formed between x2 and x5, where x2 is Subject and x5 Predicate. (Note that x2, the nominative NP, has moved out of the domain of V, a point to which we will return below.)

The semantic representation is created by stripping off all semantic features from the LF representation and rearranging the properties involved index by index. To create the semantic representation of (40), for example, the semantic features in (46) are stripped off, and rearranged as in (47).

- (46) <x5, {<Time, progressive past>}>  
 <x6, {<Subject, x2>, <Predicate, x5>}>  
 <x2, {<Kind, boy>}>  
 <x2, {<Quantity, three>}>  
 <x5, {<Kind, chase>, <Theme, x4>, <Agent, x2>}>  
 <x4, {<Kind, girl>}>  
 <x4, {<Quantity, two>}>

- (47) {<x2, {<Kind, boy>, <Quantity, three>}>,  
 <x4, {<Kind, girl>, <Quantity, two>}>,  
 <x5, {<Kind, chase>, <Theme, x4>, <Agent, x2>, <Time, progressive past>}>,  
 <x6, {<Subject, x2>, <Predicate, x5>}>}

(47) is the semantic representation of (40) in our framework, which is a set of OBJECTs. The representation in (47) does not itself describe the wide scope reading, something for which additional operations are required, to which we now turn.

### 4.3 Describing how the syntax generates wide scope readings

To describe wide scope readings, we must assume that OBJECTs are more complex. In particular, with a view to expressing the underspecification between (37b-i) and (37b-ii) and that between (37c-i) and (37c-ii), we assume that an OBJECT may consist of multiple layers, where layer 1 corresponds to the entire OBJECT, layer 2 is a member of layer 1, ... and layer  $n+1$  is a member of layer  $n$ . For example, the OBJECT in (48) may be understood as consisting of one layer as in (49) or two layers as in (50).

(48)  $\langle \mathbf{x2}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{three} \rangle \} \rangle$

(49)  $\langle \mathbf{x2-1}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{three} \rangle \} \rangle$

(50)  $\langle \mathbf{x2-1}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{three} \rangle \} \rangle,$   
 $\langle \mathbf{x2-2}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{one} \rangle \} \rangle$

In formal terms, we assume (51). Thus, the formal description of the OBJECT in (48) consisting of one layer becomes (52), and that of the OBJECT in (48) consisting of two layers becomes (53).

- (51) a. A LAYER is a pair of a LAYER id and a set of properties.  
 b. A LAYER id consists of an OBJECT id  $xn$  plus a layer number  $m$ , written as  $xn-m$ , where  $n$  and  $m$  are integers.  
 c. An OBJECT is a pair of an OBJECT id  $xn$  and a set of LAYERs whose id contains  $xn$ .

(52)  $\langle \mathbf{x2}, \{ \langle \mathbf{x2-1}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{three} \rangle \} \} \rangle$

(53)  $\langle \mathbf{x2}, \{ \langle \mathbf{x2-1}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{three} \rangle \} \rangle,$   
 $\langle \mathbf{x2-2}, \{ \langle \text{Kind}, \text{boy} \rangle, \langle \text{Quantity}, \text{one} \rangle \} \} \rangle$

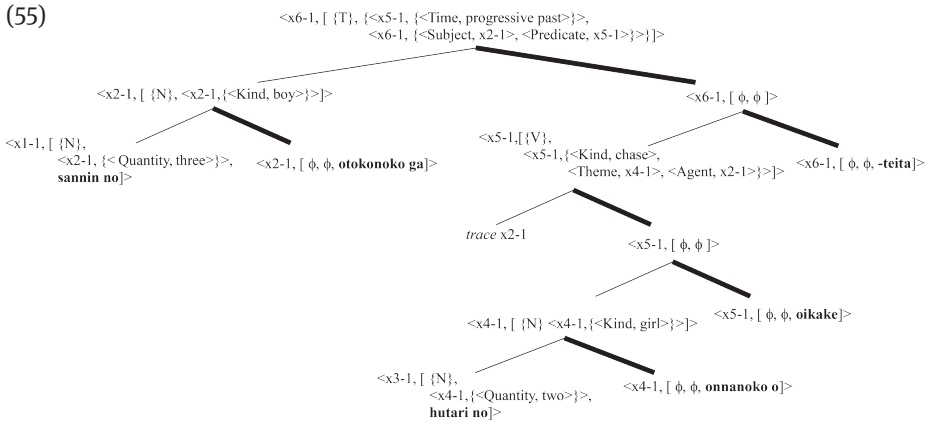
While we continue to assume that the semantic representation is a set of OBJECTs, in order to incorporate LAYERs we must assume a slightly more complex procedure of generating a set of OBJECTs. As we will see below, one consequence of the modification is that the indexes that the selected lexical items are assigned in the Numeration will now take the form of  $xn-1$ .

We now outline the procedure for generating (40) once again, in accordance with our formal definition of OBJECT in (51). The Numeration is (54) (which is the same as (43) except for the index numbers).

## (54) Numeration

{<**x1-1**, [{N}, <★, {<Quantity, three>}>, sannin]>,  
 <**x2-1**, [{N}, <**x2-1**, {<Kind, boy>}>, otokonoko]>,  
 <**x3-1**, [{N}, <★, {<Quantity, two>}>, hutari]>,  
 <**x4-1**, [{N}, <**x4-1**, {<Kind, girl>}>, onnanoko]>,  
 <**x5-1**, [{V}, <**x5-1**, {<Kind, chase>, <Theme, ★<sub>[+wo]</sub>>, <Agent, ★<sub>[+ga]</sub>>}>, oikake]>,  
 <**x6-1**, [{T}, {<★, {<Time, progressive past>}>, <**x6-1**, {<Predicate, ★>, <Subject,  
 ☆>}>}>, -teita,]>}

The process in (44) builds the LF representation in (55) (which is the same as (45), except for the index numbers).



The procedure for creating the semantic representation is slightly more complex than the procedure so far. After stripping off the semantic features from the LF representation and rearranging the properties index by index, OBJECTs are built in accordance with the definition in (51). In the case of (55), (56) is first created, and then from (56) the set of OBJECTs in (57) is created, which is the semantic representation of (40).

- (56) <**x5-1**, {<Time, progressive past>}>  
 <**x6-1**, {<Subject, **x2-1**>, <Predicate, **x5-1**>}>  
 <**x2-1**, {<Kind, boy>}>  
 <**x2-1**, {<Quantity, three>}>  
 <**x5-1**, {<Kind, chase>, <Theme, **x4-1**>, <Agent, **x2-1**>}>  
 <**x4-1**, {<Kind, girl>}>  
 <**x4-1**, {<Quantity, two>}>

- (57) {<**x2**, {<**x2-1**, {<Kind, boy>, <Quantity, three>}>}>, <**x4**, {<**x4-1**, {<Kind, girl>, <Quantity, two>}>}>, <**x5**, {<**x5-1**, {<Kind, chase>, <Theme, **x4-1x2-1x6**, {<**x6-1**, {<Subject, **x2-1x5-1**

We are now ready to explain how the syntax generates wide scope readings, beginning with the S>O reading of an SOV example such as (40). We propose that the syntax includes an optional operation called *partitioning*, which mechanically changes the LAYER ids in LF representation in certain structural environments. In particular, we assume (58), where *the domain of **xc*** consists of **xc** and all the nodes dominated by **xc** in the tree.

- (58) Partitioning:  
For any instance of <Predicate, **xa-b**>, change (i) **xa-b** to **xa-(b+1)** and (ii) all the indices **xn-m** within the domain of **xa-b** to **xn-(m+1)**.

The need for this operation and why its domain must be a Predicate can be illustrated with the sentence *John and Bill have a car*. This sentence can be taken to mean not only that John and Bill share one car, but also that each of them has a car, indicating that partitioning is needed. In describing the latter interpretation, we may say that the phrase *have a car* expresses a property of any member of the set {John, Bill}, suggesting that it is reasonable to assume that the domain of partitioning is a Predicate.

Sentences like (40) are associated with the S>O reading if partitioning applies in the course of computing the semantic representation. By applying partitioning to the domain of **x5-1** in (55), we obtain the LF representation in (59).

- (59)
- 

From this LF representation, the semantic features are stripped off as in (60), and from (60), the set of OBJECTs in (61) is created.

- (60) <**x5-1**,{<Time, progressive past>}>  
 <**x6-1**,{<Subject, **x2-1x5-2
 <**x2-1**,{<Kind, boy>}>  
 <**x2-1**,{<Quantity, three>}>  
 <**x5-2**,{<Kind, chase>, <Theme, **x4-2x2-2
 <**x4-2**,{<Kind, girl>}>  
 <**x4-2**,{<Quantity, two>}>****
- (61) {<**x2**,{<**x2-1**,{<Kind, boy>, <Quantity, three>}>,  
 <**x2-2**,{<Kind, boy>, <Quantity, one>}>}>,  
 <**x4**,{<**x4-1**,{<Kind, girl>, <Quantity, two, three, four, five, or six>}>,  
 <**x4-2**,{<Kind, girl>, <Quantity, two>}>}>,  
 <**x5**,{<**x5-1**,{<Kind, chase>, <Theme, **x4-1x2-1
 past>}>,  
 <**x5-2**,{<Kind, chase>, <Theme, **x4-2x2-2
 <**x6**,{<**x6-1**,{<Subject, **x2-1x5-2******

The process of creating (61) based on (60) involves inference computation (see the model of sentence interpretation in (32)), the parts added through inference computation indicated in (61) by shading. The OBJECT whose id is **x2** includes two LAYERS since the LF representation includes both **x2-1** and **x2-2**. Regarding the value of the Quantity attribute in **x2-2**, the system automatically records *one*.<sup>18</sup> **x4-1** is not found in the LF representation, but is added through the following inference computation: if **xn-m<sub>2</sub>** exists and **m<sub>2</sub>>1**, **xn-m<sub>1</sub>** should also exist, where **m<sub>1</sub>** is **m<sub>2</sub>-1**. The value of the Quantity attribute in **x4-1** is determined through the following inference computation: (i) the Agent value of **x5-2** is **x2-2**, and its Theme value is **x4-2**, (ii) since the Quantity value of **x2-1** is three, it is also the case that there are three **x4-2**'s in **x4-1** because of (i), and (iii) therefore, the quantity of **x4-1** is two, three, four, five or six. The set of OBJECTs in (61) is the semantic representation of the S>O reading.<sup>19</sup>

We earlier concluded that the standard generalization regarding quantifier scope originally put forth by Kuroda and Hoji is correct so far as syntax is concerned. To account for this, we must now restrict the environments where partitioning may apply, and provide a justification for this restriction, a matter we will address below.

<sup>18</sup> More generally, we assume that the system records *one* as the value of the Quantity attribute in any LAYER whose id is **xn-m<sub>2</sub>**, if the LAYER whose id is **xn-m<sub>1</sub>** has a specified value for the Quantity attribute, where **m<sub>2</sub>** is **m<sub>1</sub>+1**.

<sup>19</sup> Since the Predication relation can be formed within a Predicate, the proposed theory can also describe the 'double-decker' wide scope reading, where one nominal expression (e.g. the subject) takes wide scope with respect to another (e.g. the indirect object) which in turn takes wide scope with respect to yet another nominal expression (e.g. the direct object).

Before doing so, however, we will first provide support for the existence of LAYERS and for postulating the syntactic operation of partitioning.

#### 4.4 An argument for our theoretical assumptions

Observe that *they* in (62) can be either taken to ‘refer to’ a group of two girls or to a group of more than two girls, for example, six girls.

(62) *Three boys invited two girls to the party. They had a great time.*

This fact is captured if we assume that OBJECTs consist of LAYERS, so that the first sentence in (62) can be represented as either (63) or (64) depending on whether partitioning applies or not. We need to say no more than that the antecedent of *they* is **x4-1**, i. e. the semantic representation of *they* is identified with **x4-1**.

(63) {<**x2**,{<**x2-1**,{<Kind, boy>, <Quantity, three>}>}>,  
 <**x4**,{<**x4-1**,{<Kind, girl>, <Quantity, two>}>}>},  
 <**x5**,{<**x5-1**,{<Kind, invite>, <Theme, **x4-1x2-1
 <**x6**,{<**x6-1**,{<Subject, **x2-1x5-1****

(64) {<**x2**,{<**x2-1**,{<Kind, boy>, <Quantity, three>}>},  
 <**x2-2**,{<Kind, boy>, <Quantity, one>}>}>},  
 <**x4**,{<**x4-1**,{<Kind, girl>, <Quantity, two, three, four, five, or six>}>},  
 <**x4-2**,{<Kind, girl>, <Quantity, two>}>}>},  
 <**x5**,{<**x5-1**,{<Kind, invite>, <Theme, **x4-1x2-1
 <**x5-2**,{<Kind, invite>, <Theme, **x4-2x2-2
 <**x6**,{<**x6-1**,{<Subject, **x2-1x5-2******

Thus, if we can assume that the link between *two girls* and *they* is established at the level of semantic representation, we can take the readings observed for (62) to be evidence in support of the postulation of LAYERS and partitioning.

One might, however, argue that the link between *two girls* and *they* need not be established at the level of semantic representation, but that the two expressions simply co-refer, i. e. refer to the same object in the speaker’s Information Database. In what follows, we argue based on Japanese data that the link between the two expressions is indeed best thought to be established at the level of semantic representation.

As discussed in Ueyama (1998: Section 4.2) and elsewhere, English pronouns can be translated into Japanese in several ways, and among these are the so-called *so*- and *a*-demonstrative NPs. Crucially, *a*-demonstrative NPs can be used as long as the referred object is known to the speaker (i. e. the referred object is found in the speaker’s Information Database, in terms of our model of sentence interpretation in

(32)) through direct experience, but so-demonstrative NPs can only be used when a linguistic antecedent is present.<sup>20</sup> The contrast between the sequence of sentences in (65) and that in (66) illustrates the point under discussion, where # indicates that the sentence is not felicitous in the situation given.

(65) (At the outset of a discourse:)

*Yamada mo tuini dokusinkizoku sotugyoo da-tte-ne.*

Yamada also finally bachelor.class graduate COP.NPST-QUOT-SFP

‘(I hear that) Yamada will finally graduate from being a bachelor.’

**Ano** hito ni wa moo at-ta?

that person DAT TOP already meet-PST

‘Have you already met her (= the person he is going to marry)?’

(66) (At the outset of a discourse:)

*Yamada mo tuini dokusinkizoku sotugyoo da-tte-ne.*

Yamada also finally bachelor.class graduate COP.NPST-QUOT-SFP

‘(I hear that) Yamada will finally graduate from being a bachelor.’

**#Sono** hito ni wa moo at-ta?

that person DAT TOP already meet-PST

‘Have you already met her (= the person he is going to marry)?’

While the first sentence definitely implies that there is someone whom Yamada is going to marry, that person is not introduced linguistically. For this reason, a so-demonstrative NP cannot be used in this situation.

From this we may conclude that so-demonstrative NPs must be linked to an antecedent at the level of semantic representation. What is of interest is that (67) can be used as the translation of (62), where *they* is translated by a so-demonstrative NP, and the so-demonstrative NP can be taken either to ‘refer to’ a group of two girls or to a group of more than two girls up to six girls.

(67) *Sannin no otokonoko ga hutari no onnanoko o paatii*

three GEN boys NOM two GEN girls ACC party

*ni sasot-ta. Sono onnanoko-tati wa ooyorokobi dat-ta.*

DAT invite-PST that girl-PLURAL TOP overjoyed COP-PST

‘Three boys invited two girls to the party. {They/Those girls} had a great time.’

<sup>20</sup> This does not apply to the deictic use of so-demonstrative NPs. See Hoji et al. (2003) and Takubo (this volume) for a comprehensive treatment of Japanese demonstratives covering both their deictic and non-deictic uses.

We thus consider the interpretive possibilities of *they* in (62) and that of the *so*-demonstrative NP in (67) to be evidence in support of the postulation of LAYERS and partitioning.

## 4.5 Capturing the standard generalization

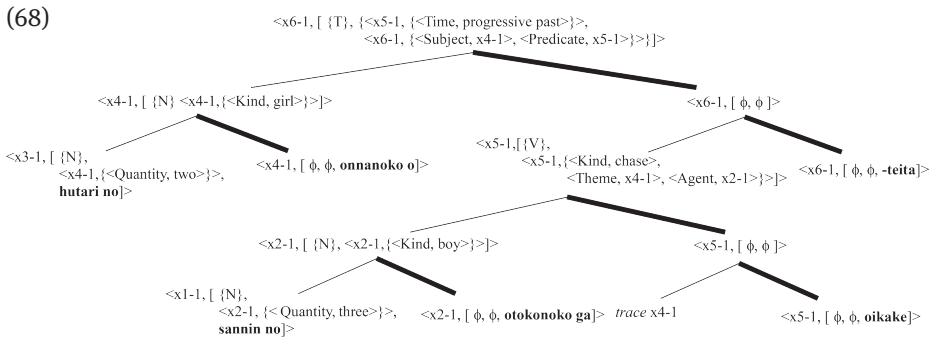
We now turn to the question of how to account for the generalization in (23), repeated here.

- (23) The generalization relevant to syntax
- SOV order gives rise to the S>O reading, but not the O>S reading.
  - OSV order gives rise to both the S>O reading and the O>S reading.

Since we claim that there is no LF movement, our account will necessarily differ from the account proposed by Hoji, which we considered earlier.

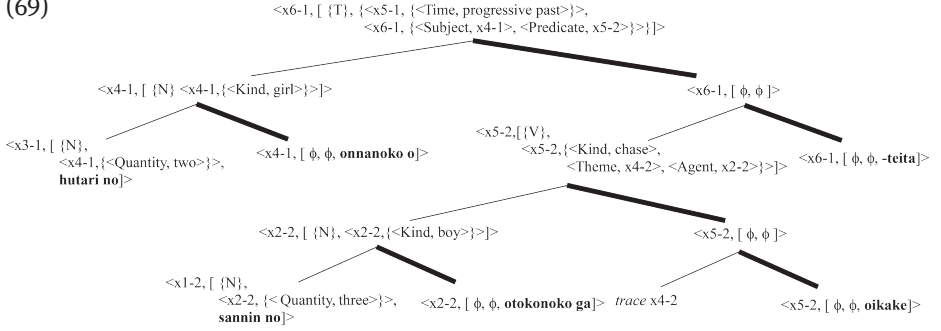
Considering (23a) first, in the theoretical framework we adopt here, (23a) entails that the sentence in (40), repeated here, cannot have the clause structure in (68). If it did, partitioning could apply, producing (69).

- (40) *Sannin no otokonoko ga hutari no onnanoko o*  
 three GEN boy NOM two GEN girl ACC  
*oikake-tei-ta.*  
 chase-PROG-PST  
 ‘Three boys were chasing two girls.’





(69)



Then, the semantic features in (70) are stripped off, resulting in the semantic representation in (71). We would thus be incorrectly led to the position that for the SOV order, the O>S reading can be directly generated by the syntax.

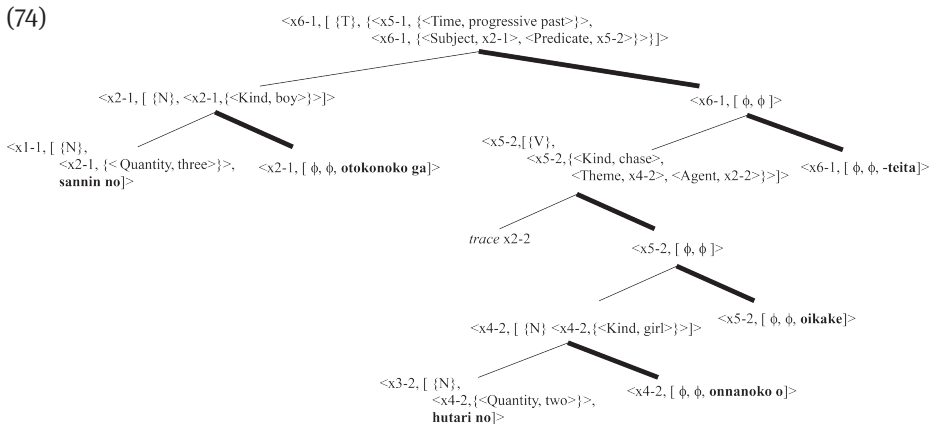
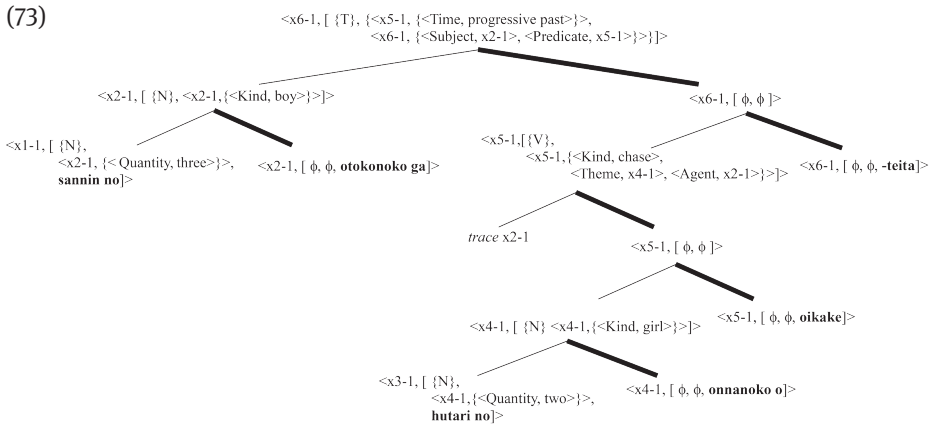
- (70) <x5-1, {<Time, progressive past>}>  
 <x4-1, {<Kind, girl>}>  
 <x4-1, {<Quantity, two>}>  
 <x2-2, {<Kind, boy>}>  
 <x2-2, {<Quantity, three>}>  
 <x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>}>  
 <x6-1, {<Subject, x4-1>, <Predicate, x5-1>}>

- (71) {<x2, {<x2-1, {<Kind, boy>, <Quantity, three, four, five, or six>}},  
 <x2-2, {<Kind, boy>, <Quantity, three>}>},  
 <x4, {<x4-1, {<Kind, girl>, <Quantity, two>}},  
 <x4-2, {<Kind, girl>, <Quantity, one>}>}>},  
 <x5, {<x5-1, {<Kind, chase>, <Theme, x4-1>, <Agent, x2-1>, <Time, progressive past>}},  
 <x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>}>}>},  
 <x6, {<x6-1, {<Subject, x4-1>, <Predicate, x5-2>}>}>}

To prevent the clause structure represented in (68) from emerging, we follow Takai (2009) and assume that nominative NPs in Japanese must Merge with a Tense element, which requires that the nominative NP move out the domain of V to find a Tense element. As a result, ☆ in <Subject, ☆> which is part of the semantic feature <x6-1, {<Subject, ☆>, <Predicate, ★>}> of the Tense (see (55)) is usually replaced with the index of a nominative NP, but not with that of an accusative or dative NP. Given that in our theory, for the computational system to generate the semantic representation of a wide scope reading, the index of the NP taking wide scope must be copied to ☆ in <Subject, ☆> and partitioning needs to apply to the corresponding Predicate, the generalization in (23a) follows naturally.

Turning to the generalization in (23b), the conclusion that the S>O reading for OSV order can be directly generated by the syntax means that a sentence such as (72) may have the clause structure in (73) (which is the same as (55)) so that after partitioning applies to *x5-1* in (73), the LF representation in (74) obtains (which is the same as (59)). We assume, in other words, that the procedure for generating the S>O reading for OSV order is the same as that for generating the S>O reading for SOV order.

- (72) *Hutari no onnanoko o sannin no otokonoko ga*  
 two GEN girl ACC three GEN boy NOM  
*oikake-tei-ta.*  
 chase-PROG-PST  
 ‘Three boys were chasing two girls.’



From this LF representation, the semantic features are stripped off as in (75), and the semantic representation in (76) is created.

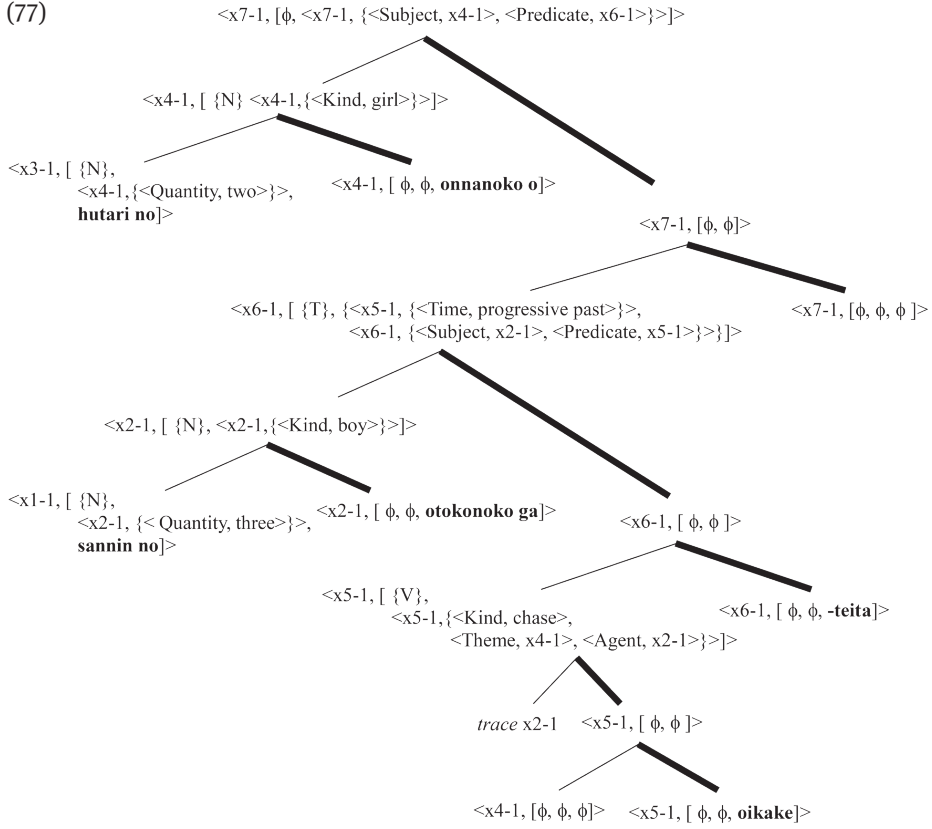
- (75) <**x5-1**, {<Time, progressive past>}>  
 <**x6-1**, {<Subject, **x2-1**>, <Predicate, **x5-1**>}>  
 <**x2-1**, {<Kind, boy>}>  
 <**x2-1**, {<Quantity, three>}>  
 <**x5-2**, {<Kind, chase>, <Theme, **x4-2**>, <Agent, **x2-2**>}>  
 <**x4-2**, {<Kind, girl>}>  
 <**x4-2**, {<Quantity, two>}>
- (76) {<**x2**, {<**x2-1**, {<Kind, boy>, <Quantity, three>}>, <**x2-2**, {<Kind, boy>, <Quantity, one>}>}>, <**x4**, {<**x4-1**, {<Kind, girl>, <Quantity, two, three, four, five, or six>}>, <**x4-2**, {<Kind, girl>, <Quantity, two>}>}>, <**x5**, {<**x5-1**, {<Kind, chase>, <Theme, **x4-1**>, <Agent, **x2-1**>, <Time, progressive past>}>, <**x5-2**, {<Kind, chase>, <Theme, **x4-2**>, <Agent, **x2-2**>}>}>, <**x6**, {<**x6-1**, {<Subject, **x2-1**>, <Predicate, **x5-2**>}>}>}

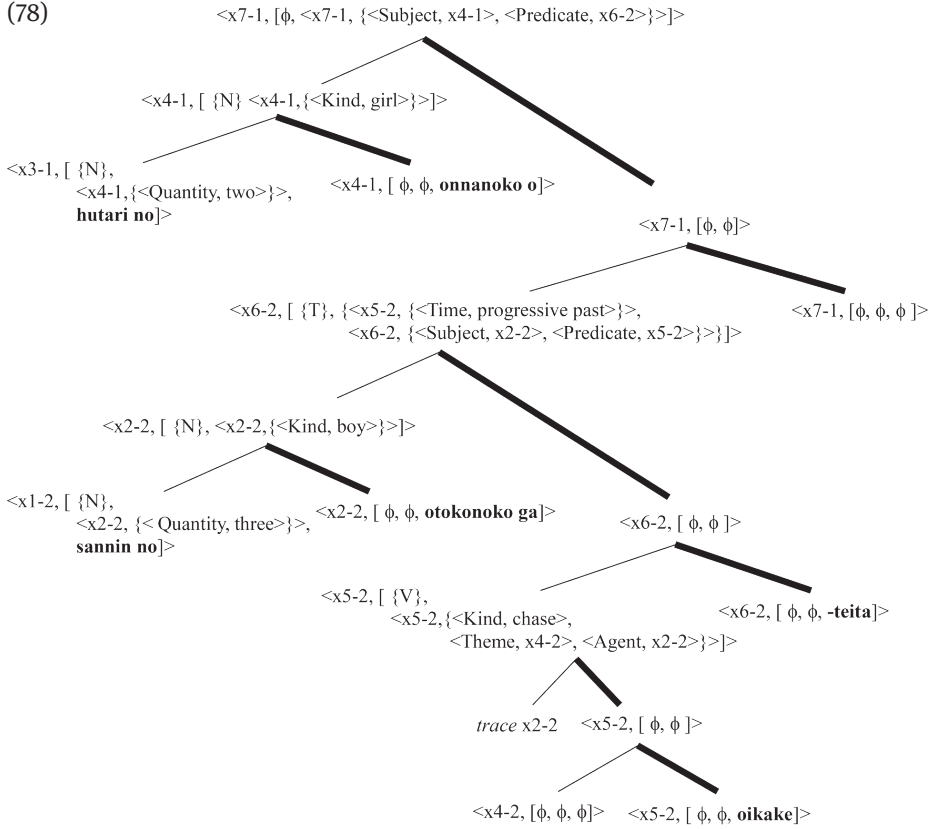
Maintaining this account of the S>O reading for OSV order, we are committed to the view that there is movement that affects the PF representation but not the LF representation (i. e. PF movement), and as a consequence, the word order may be different even for a given LF representation, cf. Saito (1989), Ueyama (1998), Hayashishita (2000b).

As mentioned above, for the computational system to generate the semantic representation of a wide scope reading in our theory, the index of the wide-scope taking NP must be copied to ☆ in <Subject, ☆> and partitioning needs to apply to the corresponding Predicate. Given that a nominative NP must be Merged with a tense, a non-nominative NP cannot make use of the Predicate introduced by a tense. Thus, the theory as it now stands is not consistent with the assumption that the semantic representation of the O>S reading for OSV order is generated by the computational system.

To reconcile our theory with the assumption in question, we first assume that there is a phonologically null functional category item whose semantic feature includes {<Subject, ☆>, <Predicate, ★>}, which may appear above the subject. It is possible for a non-nominative argument NP (NP-*ni* and NP-*o*) to Merge with this, and for its index to be copied to ☆ in <Subject, ☆> of this functional category item. We assume that when partitioning then applies to the corresponding Predicate, the semantic representation of the O>S reading in OSV order is generated. For example, under the O>S interpretation of (72), (72) has the clause structure in (77), and the application of partitioning to the Predicate **x6-1** results in the LF representation in (78).

(77)





From the LF representation in (78)), the semantic features in (79) are stripped off, and the semantic representation in (80) is created.

- (79) <x7-1, {<Subject, x4-1>, <Predicate, x6-2>}>  
 <x4-1, {<Kind, girl>}>  
 <x4-1, {<Quantity, two>}>  
 <x5-2, {<Time, progressive past>}>  
 <x6-2, {<Subject, x2-2>, <Predicate, x5-2>}>  
 <x2-2, {<Kind, boy>}>  
 <x2-2, {<Quantity, three>}>  
 <x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>}>

- (80) {<x2, {<x2-1, {<Kind, boy>, <Quantity, three, four, five, or six>}>, <x2-2, {<Kind, boy>, <Quantity, three>}>}>, <x4, {<x4-1, {<Kind, girl>, <Quantity, two>}>, <x4-2, {<Kind, girl>, <Quantity, one>}>}>},

<x5, {<x5-1, {<Kind, chase>, <Theme, x4-1>, <Agent, x2-1>, <Time, progressive past>}>},  
     <x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>, <Time, progressive past>}>}>},  
 <x6, {<x6-1, {<Subject, x2-1>, <Predicate, x5-1>}>},  
     <x6-2, {<Subject, x2-2>, <Predicate, x5-2>}>}>},  
 <x7, {<x7-1, {<Subject, x4-1>, <Predicate, x6-2>}>}>}

## 4.6 Describing wide scope readings due to extra-syntactic operations

Before closing this section, we sketch our tentative analysis of the O>S reading for SOV order. We note, first of all, that there are in fact two types of assessment that come into play in making introspective judgments as to the availability of sentence interpretations, which we call, for the sake of convenience, the *sentence-meaning assessment* and the *scene-compatibility assessment*. In sentence-meaning assessment, the speaker makes a judgment as to what a sentence literally means; in our terms, she considers what the semantic representation of the sentence directly generated by the computational system looks like. We maintain that in this type of assessment no extra-syntactic operation can intervene. In scene-compatibility assessment, by contrast, the speaker first attempts to mentally construct a scene where a given sentence would be true under the reading in question and then asks herself if the semantic representation of the sentence is compatible with such a scene. There are several possible ways in which she may check if the semantic representation is understood to be compatible with the scene, and in the course of considering those possible options, we maintain, the speaker may adjust the layer number part of any index in the semantic representation, an operation which is extra-syntactic in nature. As a result she may judge that the sentence under assessment has the reading under consideration even if the computational system does not generate the semantic representation for it. We claim that the O>S reading arises for SOV order when the speaker does a scene-compatibility assessment, and an extra-syntactic operation (i.e. the layer number adjustment) takes place (cf. Hayashishita 2014).

To illustrate, we outline here step-by-step the process by which the speaker would arrive at the O>S reading of example (40), repeated here, by means of a scene-compatibility assessment.

- (40) *Sannin no otokonoko ga hutari no onnanoko o*  
       three GEN boy           NOM two   GEN girl       ACC  
       *oikake-tei-ta.*  
       chase-PROG-PST  
       ‘Three boys were chasing two girls.’

First, she creates in her mind a scene in which (40) would be true under the O>S reading. For example, she might create in her mind a scene where there are two girls and six boys, and three boys are chasing one girl while the other three are chasing the other girl. Such a scene can be described as follows.

(81) Scene description

{<**X1**, {<Kind, boy>, <Name, B1>}>,  
 <**X2**, {<Kind, boy>, <Name, B2>}>,  
 <**X3**, {<Kind, boy>, <Name, B3>}>,  
 <**X4**, {<Kind, boy>, <Name, B4>}>,  
 <**X5**, {<Kind, boy>, <Name, B5>}>,  
 <**X6**, {<Kind, boy>, <Name, B6>}>,  
 <**X7**, {<Kind, girl>, <Name, G1>}>,  
 <**X8**, {<Kind, girl>, <Name, G2>}>,  
 <**X9**, {<Kind, boy>, <Member, {X1, X2, X3}>, <Quantity, three>}>,  
 <**X10**, {<Kind, boy>, <Member, {X4, X5, X6}>, <Quantity, three>}>,  
 <**X11**, {<Kind, boy>, <Member, {X9, X10}>, <Quantity, six>}>,  
 <**X12**, {<Kind, girl>, <Member, {X7, X8}>, <Quantity, two>}>,  
 <**X13**, {<Kind, chase>, <Theme, **X7**>, <Agent, **X9**>, <Time, progressive past>}>,  
 <**X14**, {<Kind, chase>, <Theme, **X8**>, <Agent, **X10**>, <Time, progressive past>}>}

The speaker then assesses if the semantic representation of (40) is compatible with the scene description in (81). We assume the semantic representation of (40) to be as in (57).

(57) {<**x2**, {<**x2-1**, {<Kind, boy>, <Quantity, three>}>}>,  
 <**x4**, {<**x4-1**, {<Kind, girl>, <Quantity, two>}>}>}>,  
 <**x5**, {<**x5-1**, {<Kind, chase>, <Theme, **x4-1**>, <Agent, **x2-1**>, <Time, progressive past>}>}>,  
 <**x6**, {<**x6-1**, {<Subject, **x2-1**>, <Predicate, **x5-1**>}>}>}

Given that **x2**, **x4**, and **x5** each represent an object, the speaker will conclude that (57) is compatible with the scene (81), if **x2**, **x4**, and **x5** are relevant to the scene description in (81) in the sense that each corresponds to some entity in (81).

Suppose that she starts with **x4**. She would then judge that **x4** corresponds to **X12** because **x4-1** matches **X12**, leading her to equate the two as in (82).

(82) <**x4**, {<**x4-1**, {<Kind, girl>, <Quantity, two>}>}>  
 = <**X12**, {<Kind, girl>, <Member, {X7, X8}>, <Quantity, two>}>

The speaker may then move onto **x5**. The candidates for **x5** are **X13** and **X14**. As these are not events where the two girls, **X7** and **X8** (i. e. **X12** matched with **x4-1**), play the

role of Theme together, she cannot assume that **x5** corresponds to either **X13** or **X14** by virtue of **<x5-1, {... <Theme, x4-1> ...}>**. She would instead adjust the layer numbers to create **<x5-2, {... <Theme, x4-2> ...}>**, which represents two separate events each involving **X7** and **X8** respectively in the role of Theme and conclude that **x5** corresponds to either **X13** or **X14**, as in (83).

- (83) **<x5, {<x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>, <Time, progressive past>}>}>**  
 = **<X13, {<Kind, chase>, <Theme, X7>, <Agent, X9>, <Time, progressive past>}>**;  
**<X14, {<Kind, chase>, <Theme, X8>, <Agent, X10>, <Time, progressive past>}>**

Finally, the candidates for **x2** are **X9** and **X10**. Because of the correspondence established in (83), **x2** is understood to correspond to **X9** and **X10** by virtue of **x2-2**.

- (84) **<x2, {<x2-2, {<Kind, boy>, <Quantity, three>}>}>**  
 = **<X9, {<Kind, boy>, <Member, {X1, X2, X3}>, <Quantity, three>}>**;  
**<X10, {<Kind, boy>, <Member, {X4, X5, X6}>, <Quantity, three>}>**

At this point the speaker has found corresponding objects from the scene description for each of **x2**, **x4** and **x5** of the semantic representation of (40), i. e. (57), and so judges that (57) is compatible with the scene. But notice that through this process, the speaker has in effect constructed the representation in (85), which through inference is enriched to (86), on the basis of which the speaker judges that (40) has the O>S reading.

- (85) **{<x2, {<x2-2, {<Kind, boy>, <Quantity, three>}>}>**,  
**<x4, {<x4-1, {<Kind, girl>, <Quantity, two>}>}>**,  
**<x5, {<x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>, <Time, progressive past>}>}>}**  
 (86) **{<x2, {<x2-1, {<Kind, boy>, <Quantity, three, four, five, or six>}>**,  
**<x2-2, {<Kind, boy>, <Quantity, three>}>}>**,  
**<x4, {<x4-1, {<Kind, girl>, <Quantity, two>}>**  
**<x4-2, {<Kind, girl>, <Quantity, one>}>}>**,  
**<x5, {<x5-1, {<Kind, chase>, <Theme, x4-1>, <Agent, x2-1>, <Time, progressive past>}>**,  
**<x5-2, {<Kind, chase>, <Theme, x4-2>, <Agent, x2-2>, <Time, progressive past>}>}>}**



Our analysis of the O>S reading for SOV order implies that the reading under discussion is difficult to obtain in situations where the speaker cannot easily construct a relevant scene. In fact, most of the examples we introduced above as cases where the O>S reading does not obtain for SOV order are those that present such situations. As characteristics of the O>S reading for SOV order, we have observed in Section 2.2.2 the ‘uniqueness’ effect with respect to the wide-scope-taking object nominal expression and the freezing effect with respect to the narrow-scope-taking subject nominal expression. We note that under our analysis, these characteristics are not unexpected consequences.

We have just demonstrated the process by which a speaker could judge that the semantic representation of (40), i. e. (57), is compatible with the scene description in (81), leading her to judge that (40) has the O>S reading. In the particular process we described, the checking has gone in the order of **x4**, **x5** and **x2**, but the speaker could just as well have done the checking in a different order. But checking in other orders would not lead her to conclude that the semantic representation under discussion is compatible with the relevant scene description and thus would not allow her to detect the O>S reading. In the interests of space, we illustrate just one such order here.

Suppose that the speaker starts with **x2**. She would judge that **x2** corresponds to **X9** and **X10** by virtue of **x2-1**, as in (87).

- (87) <**x2**, {<**x2-1**, {<Kind, boy>, <Quantity, three>}}>,<br>= <**X9**, {<Kind, boy>, <Member, {X1, X2, X3}>, <Quantity, three>}>,<br><**X10**, {<Kind, boy>, <Member, {X4, X5, X6}>, <Quantity, three>}>

Next, she may move onto **x5**, and would judge that **x5** corresponds to **X13** and **X14** by virtue of **x5-1**, as in (88).

- (88) <**x5**, {<**x5-1**, {<Kind, chase>, <Theme, **x4-1x2-1X13**, {<Kind, chase>, <Theme, **X7**>, <Agent, **X9**>, <Time, progressive past>}>,<br><**X14**, {<Kind, chase>, <Theme, **X8**>, <Agent, **X10**>, <Time, progressive past>}>

Finally, the speaker moves to **x4**, whose candidate is **X12**. Because of the correspondence established in (88), she must assume that **x4-1** matches **X7** and **X8** whose quantity is one. In order for the speaker to assume that **x4** corresponds to **X12**, she would need a layer of **x4** to have <Quantity, two> as one of its properties. But this is not possible, as **x4-1** is the highest layer and its quantity is one. Thus, this would lead her to assess that the semantic representation under discussion is not compatible with the relevant scene description.

In doing a scene-compatibility assessment of the semantic representation in (57) with the scene description in (81), in order for the speaker to conclude that it is com-

patible and consequently to judge the sentence to have the O>S reading, it is crucial that the speaker start with **x4**, corresponding to the accusative NP. In the default situation, it would be normal to take the nominative NP to be ‘topic’, and thus to start with the object corresponding to it in making the assessment. In order for the speaker to take the accusative NP to be ‘topic’ and to start with it, therefore, she would need some appropriate context, and unless she is able to identify a unique referent for the accusative NP, she will not be able to access such a context. It is for this reason, we claim, that we observe the ‘uniqueness’ effect with respect to the wide-scope-taking object nominal expression.

Although limitations of space prevent us from presenting the details here, we claim that the freezing effect with respect to the narrow-scope-taking subject nominal expression is felt because when the speaker does a scene-compatibility assessment with a view to evaluating whether or not a given sentence with  $SO_1O_2V$  or  $SO_2O_1V$  order receives an  $O_1>S$  reading and  $S>O_2$  reading simultaneously, it is not possible to find an order of checking that allows the speaker to assess the semantic representation to be compatible with the relevant scene and at the same time leads her to judge the sentence to have the ‘double-decker’ wide scope reading under discussion.

## 5 Conclusion

In this chapter, we began with a summary of the research on sentence interpretation involving quantifier scope in Japanese over the past 50 years, concluding that, while past studies have considered the data carefully, identified the possible involvement of an extra-syntactic operation, and solidified the generalization relevant to syntax, they have not been successful in constructing a comprehensive theory that adequately describes sentence interpretation involving quantifier scope in general. After considering the implications those past studies have for the nature of the O>S reading in SOV order (as opposed to the S>O reading in SOV order and the S>O and O>S readings in OSV order), we concluded that we need a theory that allows the semantic representation directly created by the syntax to be generously underspecified. Given that mainstream theories as they stand are unable to meet this requirement, we proceeded to propose an alternative theory of our own that does so, drawing on the framework presented in Ueyama (2015). Our theory assumes that semantic representations consist of a set of OBJECTs rather than a single proposition and that nominal expressions involving quantity are ‘referential’ expressions rather than quantifiers. Under these assumptions, we demonstrated that it is possible for semantic representations based directly on syntax to be underspecified in such a way as to accommodate extra-syntactic operations necessary to account for the O>S reading in SOV. While it remains a task for future research to develop this theory and extend its coverage, it already exhibits numerous advantages over past theories, such as making transparent the procedure

by which semantic representations are generated from the Lexicon. It is our hope that such features of this theory can be successfully exploited in the future to describe meaning-related phenomena beyond those that have been targeted in this chapter.

## Acknowledgements

The research presented in this paper was partially supported by Grant-in-Aid for Scientific Research (C) from the Japan Society for the Promotion of Science, No. 16K02631. We are thankful to the two anonymous reviewers, whose comments helped us revise our paper. Finally, but most importantly, we would like to thank the volume editors, Prof. Wesley Jacobsen and Prof. Yukinori Takubo, for their editorial help and insightful comments and suggestions. Without their contributions, our paper could have not come to the state in which it is now.

## Additional abbreviation

NPST – nonpast

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### III The semantics of time



Wesley M. Jacobsen

## **6 Temporal categories: Interactions among tense, aspect, and nontemporal meaning**

### **1 Introduction**

This chapter is concerned with how temporal meaning is expressed in Japanese, considering what kinds of temporal meaning receive overt, formal expression and what kinds of temporal meaning do not receive formal expression but can be indirectly observed in the behavior of linguistic forms in the language, and how these kinds of meaning interact in fundamental ways both with each other and with non-temporal kinds of meaning. The categories of meaning traditionally considered by linguists to be central to the temporal systems of all natural languages are tense and aspect, but how these are to be defined is not a straightforward matter, particularly for Japanese, which has been argued in certain native traditions of Japanese grammar to have no overt forms for expressing tense, and only forms for expressing aspect. One of the central concerns of this chapter will be to shed light on the basic question of how to define tense and aspect, demonstrating that, while the traditional view that Japanese has no tense markers is untenable, the two are in fact closely interrelated notions, so that forms expressing tense easily take on aspectual functions and vice versa, numerous examples of which will be considered in the course of the chapter.

Going beyond interactions among purely temporal categories, later sections of this chapter will consider how inherently temporal categories interact in Japanese with categories of meaning that are not themselves inherently temporal, such as transitivity – the number and type of entities that are presented as participating in an event or situation, intentionality – the degree to which human or other agency is involved in bringing about an event or situation, and modality – the degree to which an event or situation is presented as occurring in the real world as opposed to worlds that are merely possible, not necessarily including the real world. We will see that the way phenomena of each of these kinds are apprehended in human experience cannot be understood apart from the way such phenomena are seen to unfold, or not unfold, in time, and that the concept of change plays a central role in mediating the interaction between temporal and nontemporal dimensions of such phenomena.

This chapter is complementary to two other chapters in the current volume devoted to a treatment of categories on time in Japanese, Kudo (this volume) “On tense and aspect in discourse,” and Kaufmann (this volume) “On formal treatments of tense and aspect,” and to Chapter 15 “Lexical meaning and temporal aspect” by the present author in the volume *The handbook of Japanese lexicon and word formation*, a companion volume to the present volume in the *Handbooks of Japanese language and linguistics* series (Jacobsen 2016b). While there is necessarily some overlap in the



temporal phenomena treated in these various chapters, the current chapter will focus on sentence level meaning, in contrast to temporal phenomena at the discourse level, on the one hand, and at the word level on the other. As to formal treatments, though a certain amount of formalism will be adopted in this chapter, the purpose of such formalism will be as a descriptive aid for our discussion of temporal meaning in Japanese, rather than to compare the relative merits of differing formal theoretical frameworks of tense and aspect, for which interested readers are referred to Kaufmann (this volume).

## 2 Tense in Japanese: The *RU* and *TA* forms

Positioning events and situations in time is one of the primary functions of predicates in natural language, and they do this in one of two ways. One is to order events and situations with respect to some other point of reference, typically the time of speech. The formal means used by a language to do this is what is called tense, traditionally divided in treatments of western languages into the three categories of past, present, and future tense according to how the event or situation expressed by the predicate is ordered with respect to the time of speech – earlier than the time of speech (past), simultaneous with it (present), or later than it (future), as illustrated in (1a), (1b), and (1c) respectively.

- (1) a. *Kinoo wa itinitizyuu uti ni i-ta.*  
 yesterday TOP all.day home LOC exist-PST  
 ‘Yesterday I was at home all day.’
- b. *Ima uti ni i-ru.*  
 now home LOC exist-NPST  
 ‘I am at home now.’
- c. *Kore-kara sibaraku no aida uti ni i-ru.*  
 from.now a.while GEN interval home LOC exist-NPST  
 ‘I will be at home for a while.’

As the glosses in (1) show, this distinction is formally marked by three distinct predicate forms in English, whereas in Japanese there is only a two-way formal distinction, seen in the *-ta* inflection on the clause final predicate in (1a) versus the *-ru* inflection in (1b) and (1c). All predicate forms in Japanese exhibit this two-way distinction, which we will refer to as the *RU* form versus the *TA* form, each exhibiting allomorphic variation across various predicate types. For verbs, the *RU* form exhibits the variants *-ru* and *-u* (e.g., *i-ru* ‘be, exist,’ *sum-u* ‘live’) and the *TA* form exhibits the variants *-ta* and *-da* (e.g., *i-ta* ‘was, existed,’ *sun-da* ‘lived’). For adjectives, the *RU* versus *TA*

opposition is realized as *-i* versus *-katta* (e. g., *samu-i* ‘is cold’ versus *samu-katta* ‘was cold’) and for copular forms as *-da* versus *-datta* (e. g., *sizuka-da* ‘is quiet’ versus *sizuka-datta* ‘was quiet.’).

Predicates in natural language also interact with other elements in the clause to define various kinds of structure, or lack of it, that events or situations take as they unfold in time, a category of meaning known as aspect. The examples involving *i-ru* ‘be, exist’ in (1) all express a state of being that is (at least so far as the time under discussion is concerned) unchanging, whereas the examples in (2) involving *bango-han o tukur-u* ‘make supper’ express a more complex structure, consisting of a series of activities of the subject culminating in an endpoint at which the entity ‘supper’ comes into being.

- (2) a. (*Kinoo wa hima-dat-ta kara*) *uti de bangohan*  
 yesterday TOP free-COP-PST because home LOC supper  
*o tukut-ta.* (*<tukur-ta*).  
 ACC make-PST  
 ‘(I was free yesterday, so) I made supper at home.’
- b. (*Kyoo wa hima-da kara*) *uti de bangohan o*  
 today TOP free-COP.NPST because home LOC supper ACC  
*tukur-u.* (*<tukur-ru*)  
 make-NPST  
 ‘(I’m free today, so) I’ll make supper at home.’

The situations in (1) versus (2) exhibit the most basic of aspectual distinctions, that between states describing unchanging situations and events describing some kind of happening, typically accompanied by a change of some kind, such as the coming into being of supper in (2). Unlike the *RU* form of the stative *i-ru* ‘be, exist,’ the *RU* form of the eventive predicate *tukur-u* ‘make’ cannot be used to denote a situation that holds literally at the moment of speech, but can only be interpreted in its bare form as a future event occurring later than the moment of speech. The *RU* form of an eventive predicate receives, that is, a default future interpretation, whereas the *RU* form of a stative predicate will, absent any adverbs or other marking indicating otherwise, receive a default literal present interpretation. Future and literal present together comprise the “non-past” character of the *RU* form.<sup>1</sup> The differing tense interpretations exhibited by the *RU* form of stative versus eventive predicates provide an example of how tense and aspect interact closely in Japanese, and this aspectual distinction is one factor making it possible for Japanese to distinguish three semantic tenses with two grammatical forms.

<sup>1</sup> The *RU* form also serves as the citation form of a predicate, the “name” used for listing it in the dictionary.

Although the *RU* form of a stative predicate receives a literal present interpretation in default cases, a future interpretation is not categorically ruled out, as seen above in (1c). Neither are present-like interpretations of the *RU* form of eventive predicates impossible, as shown by the examples in (3).

- (3) a. *Uti de wa taitei boku ga bangohan o tukur-u.* (*<tukur-ru>*)  
 home LOC TOP usually I NOM supper ACC make-NPST  
 ‘At home, I usually make supper (I’m usually the one who makes supper).’
- b. *Taiyoo wa higasi kara nobor-u.* (*<nobor-ru>*)  
 sun TOP east ABL rise-NPST  
 ‘The sun rises from the east.’
- c. *Oookime no booru ni ransui o sosog-imas-u* (*<sosog-mas-ru>*)  
 large.size GEN bowl GOAL egg.mixture ACC pour-POL-NPST  
 ‘Pour the egg mixture into a large bowl (a recipe instruction).’
- d. *Kokoro yori orei o moosiage-mas-u.* (*<moosiage-mas-ru>*)  
 heart from thanks ACC say.HUM-POL-NPST

‘I thank you from the bottom of my heart.’

Such non-default interpretations, however, require something special about the context or meaning of the predicate to license the interpretation and are in that sense linguistically “marked.” The future interpretation of a stative predicate requires, for example, special marking by adverbs or other contextual features (such as in (1c)) forcing that interpretation, without which a stative predicate such as *i-ru* ‘be, exist’ is understood to refer to a literal present state of affairs. The present-like uses of the *RU* form of eventive predicates such as in (3) are also marked in some way. Events that occur habitually or in a repeated way, such as in (3a) and (3b), are not understood as occurring literally at the moment of speech, although the *RU* form here may point to an expanded “present” that subsumes the moment of speech. The use of the *RU* form in instructions such as (3c) and “performatives” such as (3d), for their part, are examples of a special “creative” use of language where the act of uttering the sentence brings about the situation expressed, rather than describing a situation that exists independently from that act. (3c) and (3d) do not therefore describe situations obtaining at the time of speech in the same way that (2a) and (2b) describe situations that occur in the past or future, and in that sense represent a special “marked” use of language.<sup>2</sup>

<sup>2</sup> As pointed out by a reviewer, these marked uses of the *RU* form typically do not exhibit a systematic opposition with the *TA* form. The performative uses in (3c) and (3d), in particular, do not admit of a

In unmarked contexts of descriptive use, then, the bare *RU* and *TA* forms of eventive predicates are limited in their tense interpretation to future and past, respectively, unlike stative predicates, whose *RU* and *TA* forms exhibit the full range of present, future, and past interpretations. The gap occurring in expressing literal present meaning in the case of eventive predicates is filled by a distinct form, the progressive *-tei(ru)* form illustrated in (4) for the predicate clause *bangohan o tukuru* ‘make supper.’

- (4) *Ken wa uti de bangohan o tukut-tei-ru.* (*<tukur-tei-ru>*)  
 Ken TOP home LOC supper ACC make-PROG-NPST  
 ‘Ken is making supper at home.’

It might appear at first glance that the *-te-i(ru)* form is a distinct third tense form in Japanese, but the existence of a similar related form, the *-te-i(ta)* form in (5), points to a different explanation.

- (5) *Ken wa sono toki uti de bangohan o*  
 Ken TOP that time home LOC supper ACC  
*tukut-tei-ta.* (*<tukur-tei-ta>*)  
 make-PROG-PST  
 ‘Ken was making supper at home at that time.’

The distinction in tense interpretation between (4) and (5) is exactly parallel to the literal present versus past meaning exhibited by the *RU* and *TA* forms in the stative examples seen earlier in (1a) and (1b), suggesting that the tense interpretation of the *-tei(ru)* form in (4) is no more than a special case of a tense meaning already present in the *RU* form. The ability of the *-tei(ru)* form to impose a literal present, rather than future, interpretation on an eventive predicate must therefore be something other than tense. What accounts for this is rather the character of *-tei-* as an *aspectual* form that presents a situation as ongoing and unchanging at the time under discussion, in just the same way as a stative predicate does, as will be discussed more fully in Section 3.2. The four-way distinction between (bare) *RU*, (bare) *TA*, *-teiRU*, and *-teiTA* thus represents the cross-cutting of a two-way tense opposition between *RU* and *TA* and a two-way aspectual opposition between the presence and absence of the *-tei* form.

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past use with *TA*, and examples expressing “eternal” truths such as (3b) are also strongly resistant to the use of the past form, although the habitual use in (3a) is not restricted in that way.

## 2.1 Apparently non-tense-like behaviors in *RU* and *TA*

Despite the apparently straightforward evidence we have seen so far that *RU* and *TA* are markers of tense, ordering events and situations with respect to the time of speech, there has historically been substantial opposition within the native Japanese grammatical tradition to treating them as tense markers, due to certain behaviors they exhibit that appear to be inconsistent with tense marking (representatives of this view include Matsushita 1930, Ando 1982, and Kunihiro 1982; see also the critical discussion of this view in Teramura 1984).

One class of such cases is the behavior exhibited by *RU* and *TA* in subordinate contexts. Unlike the uses of *RU* and *TA* in main clause contexts considered in the last section, in subordinate contexts the *RU* form sometimes denotes events that are ordered prior to the moment of speech, such as in (6), and the *TA* form sometimes denotes events that are ordered later than the time of speech, such as in (7) (see Josephs 1972, Kuno 1973 for further examples and discussion).

- (6) a. *Amerika kara ku-RU tomodati o mukae ni kuukoo*  
 America ABL come-NPST friend ACC meet PURP airport  
*made it-ta.*  
 as.far.as go-PST  
 ‘I went to the airport to meet a friend who came (was coming) from America.’
- b. *Basu o ori-RU toki ni koron-de kega o si-ta.*  
 bus ACC get.off-NPST time TMP fall-GER injury ACC do-PST  
 ‘When I got (was getting) off the bus I fell and injured myself.’
- (7) a. *Kari-TA mono wa kanarazu kaes-u yoo ni*  
 borrow-PST things TOP always return-NPST CMP DAT  
*si-nasai.*  
 do-IMP  
 ‘Things that you borrow (lit., have borrowed) you must always be sure to return.’
- b. *Tanaka-san ni at-TA toki ni kono syorui o*  
 Tanaka DAT meet-PST time TMP these documents ACC  
*watasite-kure.*  
 hand.over-give.to.me.IMP  
 ‘Give these documents to Tanaka for me when you meet (lit., have met) him.’

Since the subordinate *RU* forms in (6) denote a past event, and the subordinate *TA* forms in (7) denote a future event, the argument goes, what *RU* and *TA* express here cannot be tense.

Main clause uses where *RU* and *TA* appear to express meaning other than familiar tense categories have also been cited as evidence against their status as tense markers. These include cases where the *TA* form in main clause contexts appears to denote a present, rather than past, situation.

- (8) a. *Onaka ga sui-TA.* (*Hiru o tabe ni*  
 stomach NOM become.empty-PST lunch ACC eat-INF PURP  
*ik-oo.*)  
 go-VOL  
 'I'm hungry (lit, my stomach has become empty). (Let's go eat lunch.)'
- b. *Soto ga kura-ku nat-TA.*  
 outside NOM dark-GER become-PST  
 'It is (lit., has become) dark outside.'

The *TA* form also exhibits certain "modal" uses that appear to be unrelated to tense, such as its use in (9a) to express an urgent imperative or its use in (9b) to express the present location of an item that had been lost.

- (9) a. *Moo 7-zi-han da yo. Oki-TA,*  
 already 7:30 COP.NPST SFP get.up-PST  
*oki-TA!*  
 get.up-PST  
 'It's already 7:30. Get up! Get up!'
- b. *Tasika kono hikidasi ni saihi o ire-teoi-ta*  
 surely this drawer LOC wallet ACC put.in-put-PST  
*hazu-da-kedo. A, koko ni at-TA!*  
 must-COP.NPST-but oh here LOC exist-PST  
 'I'm sure I must have put my wallet in this drawer. Oh, here it is! (Lit. Here it was!)

If it is the case that *RU* must order an event or situation at the same time or later than the time of speech and *TA* must order an event or situation earlier than the time of speech to qualify as tense markers, none of the examples of *RU* or *TA* in (6) – (9) would qualify as tense markers. Under the assumption that temporal meaning that is not tense must be aspect, the advocates of this position argue that what *TA* and *RU* mark is a kind of aspectual meaning, in particular that *TA* marks "perfect (completive)" aspect (*kanryoosoo*) and *RU* marks "imperfect (noncompletive)" aspect (*mikanryoosoo*). According to this view, each of the uses of *TA* in (6) – (9) expresses a situation or event that has been completed or realized at the time under discussion and each of the uses of *RU* indicates an event that is not completed or realized at the time under discussion.

While it is clear from these examples that *RU* and *TA* do not consistently order a situation with respect to the time of speech, accounting for this fact in terms of an aspectual distinction such as perfect/imperfect is not without problem either. As noted by Suzuki (1976), the use of *RU* and *TA* with stative predicates poses a particular difficulty for such an analysis. It is difficult to see, for example, in what relevant sense the state of my being at home is presented as “perfect” or “completed” in the *TA* form in the earlier example (1a) or as being “imperfect” or “incomplete” in the *RU* forms in (1b) and (1c). This view would also be hard pressed to account for the fact that stative situations holding from points of time in the past up through and including the moment of speech may allow the use of either a *RU* or *TA* form, as in (10).

- (10) *Oba wa sensyuu no kinyoobi kara zutto byooiin*  
 aunt TOP last.week GEN Friday ABL the.whole.time hospital  
*in i-RU/i-TA.*  
 LOC be-NPST/be-PST  
 ‘My aunt has been (lit., is/was) in the hospital the whole time since last Friday.’

In a situation where my aunt is still in the hospital at the moment of speech, the use of *TA* in (10) does not either denote or suggest the completion of that situation at the time of speech – i. e., that her stay at the hospital ends at the moment of speech – nor does the *RU* form denote or suggest the lack of completion of that situation – i. e., that her stay will continue beyond the moment of speech.

With eventive predicates, main clause uses of *TA* do typically present a situation as completed, in the sense of realized to its end, at the time of speech and main clauses uses of *RU* as not completed, in the sense of not realized, at the time of speech. In the main clause example in (2a) in Section 2, for example, the *TA* form indicates that preparing dinner is over at the time of speech and in (2b) the *RU* form indicates that the event of preparing dinner is not realized at the time of speech. The subordinate uses of *TA* and *RU* illustrated in (6) and (7), furthermore, seem to denote the completion or lack of it of a situation at some time other than the time of speech. Inherent to the presumably aspectual meaning of “perfect” or “complete,” however, is a relationship of temporal order between the prior culmination of a situation and the existence of some state of affairs resulting from and following that. Conversely, “imperfect” or “incomplete” involves an ordering relationship between a point in time at which a situation has not been culminated, and later culmination of that situation, either actual or potential. Assuming that relationships of ordering are a question of tense, this means that so-called aspectual notions such as perfect or imperfect cannot be neatly divorced from some element of tense meaning as well.

What the subordinate uses of *RU* and *TA* in (6) and (7) show, however, is that these forms may express a temporal ordering anchored at points in time other than the moment of speech. Specifically, the situation or event expressed in the subordinate clause is in such cases ordered with respect to the time of the situation or event

expressed in the main clause. In (6b), for example, the *RU* form in the subordinate clause orders the time of my getting off the bus later than (future relative to) the time of my falling, although both events occur earlier than (past relative to) the time of speech. In (7b), the *TA* form in the relative clause orders the time of your meeting Tanaka earlier than (past relative to) the time of your handing the documents over to him, although both events are here ordered later than (future relative to) the present moment of speech. Such subordinate uses of *RU* and *TA* illustrate what can be called relative tense, as distinct from absolute tense, the more traditional notion of tense whereby events or situations are ordered relative to the time of speech (Comrie 1985, Ogiwara 1999). This is not to say that all subordinate uses of *RU* and *TA* exhibit relative tense. Stative predicates in subordinate clauses with *toki*, the functional equivalent of English *when*, for example, exhibit a variation between relative and absolute tense, as illustrated by the acceptability of either subordinate *RU* or *TA* in (11) with no change in the temporal ordering relationships indicated (Soga 1983).

- (11) *Nihon in i-RU/i-TA toki ni Huzisan ni nobot-ta.*  
 Japan LOC be-NPST/be-PST time TMP Mount.Fuji GOAL climb-PST  
 ‘When I was in Japan I climbed Mt. Fuji.’

The use of *RU* in the subordinate *toki* clause here is an instance of relative tense, situating the state of my being in Japan in an overlapping relationship with (relative present to) the event of my climbing Mt. Fuji, which is itself ordered earlier than (past relative to) the time of speech, while the use of *TA* in the subordinate clause is an instance of absolute tense, situating the state of my being in Japan earlier than (past relative to) the time of speech.<sup>3</sup> Whether marking relative tense or absolute tense, though, *RU* and *TA* in subordinate clauses consistently mark a temporal ordering of some kind, in a way that qualifies them to be treated as tense markers defined in a broader sense than tense has traditionally been understood.

3 Though less commonly than with stative predicates, absolute tense interpretations are also possible with eventive predicates in certain subordinate contexts. One important class of cases is pointed out by Mihara (1992), who notes a tendency for subordinate eventive predicates to receive a relative tense interpretation when they differ in tense form (*RU* or *TA*) from the main predicate, but to receive an absolute tense interpretation when they are of the same tense form as the main predicate. In the following example from Mihara (1992), for example, where both subordinate and main predicates are eventive and in the *TA* form, the subordinate event can only be interpreted as past relative to the time of speech, but not to the time of the main clause event (an interpretation which, incidentally, would be impossible based on real world knowledge):

- (i) *Etizen kaizen de zisatu si-TA zyosei wa soko e ik-u*  
 Echizen shore LOC suicide do-PST woman TOP there GOAL go-NPST  
*no ni takusii o tukat-TA.*  
 NMLZ PURP taxi ACC use-PST  
 ‘The woman who committed suicide on the Echizen shore used a taxi to get there.’



Other presumably non-tense uses of *TA*, such as those in (8) and (9), similarly do not lack an element of temporal ordering. The use of *TA* to indicate a present situation, such as *Onaka ga suita* ‘I am hungry’ in (10a), for example, orders the event of *becoming* hungry prior to the present state of *being* hungry. The “modal” use of *TA* as an imperative in (9a) may be understood to shift the reference of ‘now’ from the actual moment of speech to an ideal possible world in which the event indicated has occurred prior to the moment ‘now.’ The “discovery” example in (10b) may be seen as another kind of shift in the time under discussion from the moment of speech to a time earlier than the moment of speech in which the lost item existed in the location at which it has just been discovered.

Distilling tense to its essential function of ordering one situation in time with respect to another, then, all uses of *TA* and *RU* may be seen as exhibiting a basic tense function, *TA* that of ordering a situation relatively earlier in time with respect to another and *RU* that of ordering a situation as overlapping with or relatively later in time than another, whether at the moment of speech or otherwise. Tense is therefore an inherently relational concept, one that requires two situations to be sufficiently distinct from one another to be placed in a mutual ordering relationship. Aspect, by contrast, is concerned with the qualitative structure, or lack of it, that a singular situation has in time, some situations having no internal complexity such as stative situations with *i-ru* ‘be, exist’ seen earlier in (1), others having internal complexity such as the eventive situation *bangohan o tukur-u* ‘make supper’ seen earlier in (2). To the extent, however, that temporal structure of any kind unfolds on a unidimensional time line, ordering relationships will necessarily arise, either among constituent elements internal to that structure, or between that structure and points in time outside the structure, whether prior to it or following it (Jacobsen 2005, 2007). As will be seen when we turn to aspect in Section 3.1, different kinds of aspectual structure allow for different possibilities in the way elements internal to this structure are ordered and in the way the structure as a whole may be ordered with respect to elements external to the structure, so that aspectual meaning places constraints on tense meaning. Conversely, if situations or elements ordered in a tense relationship lose their distinct character and come to be viewed as elements of a larger overarching structure, they may come to aggregately define temporal situations that are aspectual in character. Tense and aspect carry in this way the inherent possibility of encroaching on the meaning territory of one another, in some cases making it difficult to clearly distinguish tense meaning from aspectual meaning. Understood in this light, the controversy surrounding the tense-basic versus aspect-basic character of Japanese *RU* and *TA* may be seen as a natural, if not inevitable, consequence. Numerous further examples of interactions between tense and aspect will emerge when we turn our focus to aspectual structure, but before that we turn in the next section to consider more carefully what the kinds of temporal elements are that are ordered in tense relationships.

## 2.2 The role of topic time in temporal ordering

As seen in the previous section, the behavior of *RU* and *TA* in Japanese points to a broad conception of tense as imposing an ordering relationship between the time of one event or situation and another, the latter serving as a reference point for the former. The second of these two temporal elements has traditionally been identified with the time of the speech act, but under this broader conception of tense may be identified with the time of other events or situations. What about the first of these two temporal elements, the one that is ordered with respect to the second? At first glance it may appear that this is simply the event or situation expressed by the predicate of a sentence, such as the occurrence of the earthquake in (12a), which is here ordered before the time of speech, as represented by < in (12b), meaning “occurs earlier than.”

- (12) a. *2011nen ni Toohoku tihoo de daisinsai ga*  
 2011.year TMP Tohoku area LOC major.earthquake NOM  
*oki-ta.*  
 occur-PST  
 ‘In 2011 a major earthquake occurred in the Tohoku area.’
- b. time of earthquake < time of speech

Not all uses of the past tense, however, lend themselves to such a straightforward analysis. As Klein (1994) has convincingly shown, stative examples like that in (13) involve more than a simplistic ordering of the situation expressed by the predicate prior to the time of speech (the following example is adapted from Klein for Japanese).

- (13) *Hon no hyoosi wa aka-dat-ta.*  
 book GEN cover TOP red-COP-PST  
 ‘The cover of the book was red.’

(13) does not mean that the redness of the book’s cover is ordered prior to the time of speech, as it does not exclude the possibility, in fact the likelihood, that the redness of the book’s cover holds at the moment of speech and for times beyond that, so long as the book continues to exist. Rather, sentences such as (13) are understood as being about a *particular* time prior to the time of speech that is relevant to the context of the conversation, made explicit in an example such as (13’).

- (13’) *Heya ni hair-u to teeburu no ue ni hon*  
 room GOAL enter-NPST COND table GEN top LOC book  
*ga oi-teat-ta. Sono hyoosi wa aka dat-ta.*  
 NOM put-RES-PST its cover TOP red COP-PST  
 ‘When I entered the room there was a book placed on the table. Its cover was red.’

A similar point can be made about the past tense of negative sentences (Partee 1973). In (14a), the situation of my not locking the door may encompass the present moment or moments in the future, and this situation as a whole is thus not ordered prior to the time of speech, nor does this example mean that I never locked the door at any point in time prior to the time of speech. Rather, it is understood as referring to a particular point in time under discussion from the previous context, as for example made explicit in (14b).

- (14) a. *Doa ni kagi o kake-na-katta.*  
 door GOAL lock ACC engage-NEG-PST  
 ‘I didn’t lock the door.’
- b. *Uti o de-ru toki ni ...*  
 house ACC leave-NPST time TMP  
 ‘When I left the house ...’

What is ordered prior to the time of speech in examples (13) and (14a), then, is not the situation expressed by the predicate per se, but rather this time under discussion, called by Klein (1994) “topic time (TT),” a renaming of what Reichenbach (1947) in his classic study called “time of reference.” In this chapter, we will adopt Klein’s terminology because of possible confusion inherent in Reichenbach’s term “time of reference” with other reference-setting temporal elements, including time of speech (“time of utterance” (TU) in Klein’s framework). As examples (12)–(14) show, topic time is something that is typically made explicit through the use of temporal adverbs or temporal clauses such as *2011nen ni* ‘in 2011’ and *heya ni hairu to* ‘when I entered the room’.

In examples such as (13) involving stative predicates, topic time is included within the time of the situation expressed (what Klein calls “time of situation” (Tsit)), but is not coterminous with it. In the case of an eventive predicate such as (12), TT is coterminous with Tsit (the time of occurrence of the earthquake) itself, and the existence of TT may therefore not be as salient. It is a general characteristic of what Reichenbach calls the “simple tenses” of present, past, and future that TT overlaps or coincides with Tsit, as illustrated in (15) (in subsequent examples,  $\supset$  means “includes” and  $\subset$  means “is included in”).

- (15) a. *Boku wa ima uti ni i-ru.* Tsit  $\supset$  TT  $\supset$  TU  
 I TOP now home LOC be-NPST  
 ‘I am at home now.’
- b. *Boku wa yuube 11-zi ni ne-ta.* Tsit = TT  $<$  TU  
 I TOP last.night 11:00 TMP go.to.bed-PST  
 ‘I went to bed at 11:00 last night.’

- c. *Boku wa konban 11-zi ni ne-ru.* TU < TT = Tsit  
 I TOP tonight 11:00 TMP go.to.bed-NPST  
 'I'm going to bed at 11:00 tonight.'

Cases of what Reichenbach calls "complex tenses" most commonly involve a distinct Tsit and TT, as in the so-called present perfect, past perfect, and future perfect "tenses," where Tsit is ordered earlier than TT, illustrated in (16) for both Japanese and English counterparts. The role of TT thus becomes more salient, particularly in cases such as (16b) and (16c), where the three temporal elements Tsit, TT, and TU, are all distinct.

- (16) a. *Aki wa (moo) ne-tei-ru* Tsit < TT  $\supset$  TU  
 Aki TOP already go.to.bed-RES-NPST  
 'Aki has (already) gone to bed.'
- b. *(Boku ga denwa-si-ta toki) Aki wa (moo)*  
 I NOM phone-do-PST time Aki TOP already  
*ne-tei-ta.* Tsit < TT < TU  
 go.to.bed-RES-PST  
 'At the time that I called, Aki had already gone to bed.'
- c. *(Boku ga tuk-u koro ni wa) Aki wa (moo)*  
 I NOM arrive-NPST time TMP CTR Aki TOP already  
*ne-tei-ru (daroo).* Tsit < TT and TU < TT  
 go.to.bed-RES-NPST TENT  
 'At (by) the time I arrive, Aki will probably have gone to bed.'

Cases where TT is ordered earlier than Tsit, by contrast, are seen in the so-called present, past, and future prospective "tenses," illustrated in (17).

- (17) a. *Aki wa ne-yooto-si-tei-ru.* TU  $\subset$  TT < Tsit  
 Aki TOP go.to.bed-VOL-do-PROG-NPST  
 'Aki is about to go to bed.'
- b. *(Sono toki) Aki wa ne-yooto-si-tei-ta.* TT < TU and TT < Tsit  
 that time Aki TOP go.to.bed-VOL-do-PROG-PST  
 '(At that time) Aki was about to go to bed.'
- c. *(Sono koro ni wa) Aki wa ne-yooto-si-tei-ru*  
 that time TMP CTR Aki TOP go.to.bed-VOL-do-PROG-NPST  
*(daroo).* TU < TT < Tsit  
 TENT  
 '(At (by) that time), Aki will probably be about to go to bed.'

Though temporal categories such as prospective and perfect have sometimes been viewed as tense categories, however, the ordering relationships they impose are between the situation expressed in the predicate clause (Tsit) and a topic time (TT) from which that situation is viewed, not between TT and time of utterance (TU), and are therefore not categories of tense in the strict sense of Klein. The ordering of TT and TU – tense proper, in Klein’s sense – is rather borne by the *RU* and *TA* forms in cases such as (16) and (17), no differently from the case of simple tenses such as seen in (15).

In examples (15) – (17), the “simple tenses” are expressed by bare predicate forms in *RU* and *TA* and involve an overlap between TT and Tsit, whereas the “complex tenses” require complex morphological forms such as *-tei(ru)* and *-(y)ooto-su(ru)* and position Tsit at a point in time distinct from TT. The correlations here are not perfect, however. On the one hand, there are cases of bare predicate forms in *RU* and *TA* where TT overlaps not with Tsit, but with TU. Such examples with *TA* were seen earlier in (8), repeated here as (8’).

- (8’) a. *Onaka ga sui-TA.* (Hiru o tabe ni  
 stomach NOM become.empty-PST lunch ACC eat-INF PURP  
*ik-oo.*) Tsit < TT  $\supset$  TU  
 go-VOL  
 ‘I’m hungry (lit, my stomach has become empty). (Let’s go eat lunch.)’
- b. Context: looking out the window after having been immersed in a book for a while.  
*Soto ga kura-ku nat-TA.* Tsit < TT  $\supset$  TU  
 outside NOM be.dark-GER become-PST  
 ‘It is (has become) dark outside.’

Compare these with more standard past-tense uses of *TA* where Tsit = TT < TU, such as in (15b) seen earlier. Although the same *TA* form is used in the two cases, the overlap of TT with TU in cases such as (8’) can be demonstrated by the possibility of paraphrasing the temporal relationships in (8’) using the *-tei(ru)* form in its perfect (resulting state) use, as in (8’).

- (8’’) a. *Onaka ga sui-tei-RU.* Tsit < TT  $\supset$  TU  
 stomach NOM become.empty-RES-NPST  
 ‘I’m hungry (lit, my stomach is in the state of having become empty)’
- b. *Soto ga kura-ku nat-tei-RU.* Tsit < TT  $\supset$  TU  
 outside NOM be.dark-GER become-RES-NPST  
 ‘It is (lit., is in the state of having become) dark outside.’<sup>4</sup>

<sup>4</sup> Despite the paraphrase relationship in the temporal relationships in (8’) and (8’), the conditions of use are slightly different in the two cases, (8’) carrying with it a great sense of immediacy that favors a

The different positioning of TT can also be seen in the differing negative responses possible to question forms involving the two uses of *TA*. A negative answer to a question with a *TA* form such as (8'a) requires the negative of an explicitly perfect form in *-tei(ru)*, but does not allow the use of a simple past negative, as seen in (18).

- (18) A: *Onaka ga sui-TA?* Tsit < TT > TU  
 stomach NOM become.empty-PST  
 'Are you hungry? (lit, has your stomach become empty?).'  
 B: *Iya, sui-tei-na-I/* \**suk-ana-KATTA.*  
 no become.empty-RES-NEG-NPST/ become.empty-NEG-PST  
 'No, I'm not (lit., (my stomach) is not in the state of having become empty/\*it didn't become empty).'

Contrast this with the negative response to the standard *TA* form where TU overlaps with Tsit, as in (19), in which case the use of a simple past negative is possible, and for many speakers preferred ("~" here means 'overlaps with').

- (19) A: *Yuube wa kirei-na hosizora ni nat-tei-ta kedo,*  
 last.night TOP pretty starry.sky DAT become-RES-PST but  
*mi-TA?* Tsit ~ TT < TU  
 see-PST  
 'Last night was a beautiful starry sky. Did you see it?'  
 B: *Iya, mi-na-KATTA/?mi-tei-na-I.*  
 no see-NEG-PST/see-RES-NEG-NPST  
 'No, I didn't see it/haven't seen it.'

The use of *TA* where TT overlaps with TU requires a predicate with a prominent change-of-state aspectual component, of the sort we will consider in more detail in Sections 3.1 and 3.2.2.

Examples of bare eventive predicate forms with *RU* where TT overlaps with TU are less frequent, but can be seen in examples where the *RU* form of an eventive predicate co-occurs with adverbs such as *ima (kara)* '(from) now,' *tadaima* 'now,' and *kore kara* 'from now,' as in (20).

- (20) *Ima kara ne-ru.* TU < TT < Tsit  
 now ABL go.to.bed-NPST  
 'I'm going to bed now.'

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first-person interpretation with the *TA* form in (8'a), as opposed to (8''a), where *-tei(ru)* can more freely be used of non-first-person subjects.

Examples such as (20) can be paraphrased with explicitly prospective forms such as *neru tokoro da* ‘be on the point of going to bed’ or *neyoto-si-tei-ru*, ‘be about to go to bed.’ Compare these with more standard future tense uses of *RU* where  $TU < TT = Tsit$ , such as in the earlier (15c), where such paraphrases are not possible.

Bare predicates in both *RU* and *TA* therefore exhibit a variation in the positioning of *TT* in main clause contexts, sometimes overlapping with *Tsit*, sometimes with *TU*. Of these two collocations, the former represents the standard, default usage of these forms, one where the distinct positioning of *TT* and *TU* can be seen to be the hallmark of a more tense-like character, in contrast to a more aspect-like character that results when *TT* and *TU* overlap. No matter what the positioning of *TT*, however, in all uses of main clause bare predicates in *RU*, *TU* is ordered either overlapping with or later than *Tsit*, and in all uses of bare predicates in *TA*, *Tsit* is ordered earlier than *TU*. Despite the evidence presented for the role of *TT* in Japanese by temporal adverbs and by differing patterns of negation in response to the *TA* form, then, the morphological distinction between the *RU* and *TA* forms does not itself make explicit reference to *TT*.

With complex aspectual morphological forms such as in (16) and (17) seen earlier, by contrast, the separation of *Tsit* and *TT* is the norm rather than the exception. With these forms, the order of *TU* and *Tsit* is not necessarily always determinate. In (16c), for example, it is not clear whether Aki’s going to bed has or has not occurred at the time of speech – either ordering is compatible with this example. (17b) likewise leaves open the possibility either that Aki has gone to bed at the time of speech or, perhaps less likely, that he has not yet gone to bed at the time of speech. In both of these examples, the order of *TU* and *Tsit* is left unspecified, unlike examples where the bare form of *RU* or *TA* is used.

Not all complex aspectual morphological forms, however, involve a *Tsit* that is disjoint from *TT*. With the progressive use of *-tei(ru)* seen earlier in (4), repeated here, for example, there is an overlap between *Tsit* and *TT* in just the way seen in (15a) for stative predicates.

- (4) *Ken wa uti de bangohan o tukut-tei-ru.*       $Tsit \supset TT \supset TU$   
 Ken TOP home LOC supper ACC make-PROG-NPST  
 ‘Ken is making supper at home.’

The complex morphology here makes it possible for *TU* to overlap with both *Tsit* and *TT* in a way that would not be possible with the bare form of an eventive predicate such as *tukur-u* ‘make,’ which would otherwise receive a default future interpretation with *TU* distinct from both *TT* and *Tsit*, as seen in (2b), repeated here.

- (2b) (Kyoo wa hima-da kara) uti de bangohan o  
 today TOP free-COP.NPST because home LOC supper ACC  
 tukur-u. TU < TT = Tsit  
 make-NPST  
 ‘(I’m free today, so) I’ll make supper at home.’

Why *-tei(ru)* should allow two apparently distinct uses, one where TT and Tsit are distinct, as in (16a), and one where they overlap, such as in (4), is a question we return to in Section 3.2.

Complex aspectual morphological forms such as *-tei(ru)* and *-(y)ooto-su(ru)* share in common the function of allowing TT to be positioned in a way different from that associated with the default use of bare predicate forms in *RU* and *TA*. They provide, as it were, a “viewpoint” on the situation expressed by the predicate that is different from that associated with the bare predicate forms, exemplifying what Smith (1997) has called “viewpoint aspect,” also known as “grammatical aspect.” These forms do more, however, than just position TT in a unique manner. They also have the effect of binding Tsit and TT together into a larger temporal structure of which the two are seen as subparts, a feature that imparts to these forms their specifically *aspectual* character. The *-(y)ooto-su(ru)* form, for example, binds a future event (in the case of (17), going to bed) into a larger process that is set in motion at the topic time with an inertia that leads ultimately to occurrence of that event. Whether that process is seen as a naturally occurring one or one that results from human intention is reflected in the two meanings “about to happen” and “try to do” that are encompassed in this form. The *-tei(ru)* form, similarly, functions in (16) to bind an earlier event (here again, going to bed) to a later topic time where a state resulting from the earlier event (here, being asleep) is seen to hold.

### 2.3 Evidence for a subordinate “topic time”

In the last section we saw cases where the *RU* and *TA* forms of eventive predicates in main clauses exhibit a shift in the positioning of TT from a position overlapping with Tsit to a position overlapping with TU instead. We also saw in Section 2.1 that in certain subordinate contexts *RU* and *TA* are given a relative tense interpretation where the temporal ordering created is relative to the time of the event in the main clause, or, more accurately, the topic time of the main clause (TT), rather than TU. The question arises as to whether there is evidence in such cases of a “subordinate TT (TT(sub))” that shifts, sometimes overlapping with the subordinate event (Tsit(sub)) and sometimes overlapping with the TT of the main clause (TT(main)) – whether there is evidence, that is, of two types of subordinate *RU* and *TA* exhibiting the following ordering relationships (as before, “~” here means ‘overlaps with’).





- (23) a. *Uti o de-RU mae ni kaisya kara denwa*  
 house ACC leave-NPST before company ABL phone  
*ga at-te yotei henkoo o siras-are-ta.*  
 NOM exist-GER plan change ACC inform-PASS-PST  
 TT(main) < TT(sub) ~ Tsit(sub)  
 ‘Before I left the house, I got a call from the office and was told of the change in plans.’
- b. *Uti o de-RU toki ni ...* TT(main) ~ TT(sub) < Tsit(sub)  
 house ACC leave-NPST time TMP  
 ‘When I was leaving the house, I got a call from the office and was told of the change in plans.’

The subordinate predicate *de-RU* ‘leave’ may be paraphrased with the explicit prospective form *deyooto-su(ru)* ‘be about to leave,’ in (23b) only, but not in (23a), with a consequently greater focus in (23b) on the intention of the action expressed, rather than the action itself. This creates a stronger implication in (23b) that the event of leaving the house was in fact not realized due to the change of plans referred to in the main clause, a meaning that can be correlated with a shift in TT(sub) away from Tsit(sub) to TT(main). This is a mirror image of the shift observed in TT(sub) in subordinate *TA* clauses from a position overlapping with Tsit(sub) to a position overlapping with TT(main), so that all four collocations represented in (21) are attested.

The phenomena we have considered in the last two sections provide evidence for the existence of a topic time (TT) operating both in main clause and subordinate contexts in Japanese. In the framework of Klein (1994), it is the ordering of this TT relative to TU in main clause contexts that defines the domain of (absolute) tense and the ordering of TT relative to Tsit that defines the domain of aspect. This extends naturally to subordinate contexts, where the role of TU is replaced by the TT of the main clause, so that in subordinate contexts the ordering of the subordinate TT relative to the main clause TT defines the domain of (relative) tense, and the ordering of subordinate TT to subordinate Tsit defines the domain of aspect. Relationships of temporal order thus characterize both tense meaning and aspectual meaning in the Klein framework. We have also seen that a shift in the positioning of TT, sometimes overlapping with Tsit and sometimes disjoint from it, can be seen both in the case of bare *RU* and *TA* forms and in the case of complex morphological forms such as *-te-i(ru)*. With bare *RU* and *TA* forms, however, the overlap of TT with Tsit is the norm, so that the situation expressed by the predicate is typically viewed from the time of the situation itself, whereas with complex morphological forms such as *-te-i(ru)* and *-(y)ooto-su(ru)*, the situation is viewed from the standpoint of a TT that may either overlap with or be disjoint from the situation expressed, but in all cases introduces added structure to the situation of the predicate and is itself incorporated as an element in that structure. It is the function of augmenting and modifying the temporal struc-

ture of the predicate in this way that lends to these forms their character as *aspectual* markers, as opposed to *RU* and *TA*, which have the primary function of ordering temporal elements rather than imposing additional structure on them and as such function foremost as *tense* markers. Understanding how the temporal structure of predicates is modified of course requires an understanding of what kinds of temporal structure predicates have to begin with, a question we turn to in the next section.

### 3 Aspectual categories in Japanese

#### 3.1 Situation aspect<sup>5</sup>

As seen in the previous section, aspectual meaning – the temporal structure that events or situations define as they unfold in time – is sometimes identified with grammatical forms such as *-tei(ru)* and *-(y)ooto-su(ru)*, exemplifying what Smith (1997) calls “viewpoint aspect.” There is another kind of aspect that Smith calls “situation aspect” – also known as “lexical aspect” and, in certain European traditions, as “Aktionsart” – that is concerned with the temporal structure or quality that is inherent to the situation expressed by a predicate, such as the various qualities of being a state, activity, or change-of-state (achievement/accomplishment) that form the core of the celebrated aspectual classifications proposed independently for English in Vendler (1957) and for Japanese in Kindaichi (1950).<sup>6</sup> In the absence of overt surface forms to mark each of these qualities, these classifications rely on indirect diagnostic methods to arrive at their classifications, first and foremost the behavior that predicates exhibit with the aspectual forms *-tei(ru)*, for Japanese, and *-ing*, for English, as in (24).

- (24) A. States: Do not accept *-tei(ru)*; do not accept *-ing*.  
 E. g., *ar-u* ‘be, exist,’ *i-ru* ‘be, exist (of animate beings),’ *deki-ru* ‘be able to’  
*Eki no mae ni kooban ga ar-u (\*at-teiru)*.  
 station GEN front LOC police.box NOM exist-NPST  
 ‘There is (\*is being) a police box in front of the station.’
- B. Activities: Take a *progressive* interpretation with *-tei(ru)*; accept *-ing* with a progressive interpretation.  
 E. g., *hasir-u* ‘run,’ *odor-u* ‘dance,’ *tabe-ru* ‘eat,’ *mi-ru* ‘watch,’ *asob-u* ‘play’

<sup>5</sup> Portions of Sections 3.1 and 3.2 incorporate modifications of analyses presented earlier in Jacobsen 2016b and Jacobsen 2018.

<sup>6</sup> See Jacobsen 2016b for a more in-depth treatment of the Vendler/Kindaichi aspectual classification.



Accomplishments: ~~~~~~(X)—— (e.g. *kimono o ki-ru* ‘put on a kimono’)

These schematizations are intended to convey a homogeneous quality in states and activities, in the sense that any subpart of an interval over which a state or activity obtains is essentially indistinguishable in quality from any other subpart of that interval. Activities are less perfectly homogeneous than states, being made up of atomic subcycles (Dowty 1979; Bohnemeyer and Swift 2004), represented by (~) in (25), such as a characteristic sequence of steps for running, walking, or dancing, which, when repeated over and over and viewed as an aggregate, as if through a wide-angle camera lens, converge to give the impression of homogeneous continuity. While a state can be predicated of any arbitrary interval or moment of time over which the state holds, therefore, activities can only be predicated of intervals of time having a certain minimal length exceeding that of the subcycle, but not of moments of time.

- (26) a. *Ken wa kinoo {2-zi kara 5-zi made/3-zi kara*  
 Ken TOP yesterday {2:00 ABL 5:00 until/3:00 ABL  
*3-zi-gohun made/ 3-zi ni} uti ni i-ta.*  
 3:05 until/ 3:00 TMP} home LOC exist-PST  
 ‘Ken was at home yesterday {from 2:00 to 5:00/from 3:00 to 3:05/at 3:00}.’
- b. *Odoriko wa kinoo {2-zi kara 5-zi made/3-zi kara*  
 dancing.girl TOP yesterday {2:00 ABL 5:00 until/3:00 ABL  
*3-zi-gohun made/\* 3-zi ni} butai no ue de odot-ta.*<sup>8</sup>  
 3:05 until/ 3:00 TMP} stage GEN top LOC dance-PST  
 ‘The dancing girl danced on the stage yesterday {from 2:00 to 5:00/from 3:00 to 3:05/\*at 3:00}.’

For activities to be predicated of moments of time requires the use of *-tei(ru)*, which imposes a more perfectly homogeneous character on the activity predicate, as in (27).

- (27) *Odoriko wa kinoo 3-zi ni butai no ue de*  
 dancing.girl TOP yesterday 3:00 TMP stage GEN top LOC  
*odot-tei-ta.*  
 dance-PROG-PST  
 ‘The dancing girl was dancing on the stage yesterday at 3:00.’

<sup>8</sup> This example is acceptable with *3-zi ni* ‘at 3:00’ under the interpretation ‘begin to dance at 3:00,’ where *odori* ‘dance’ has forced on it an achievement-like character denoting the onset point marking a change from the non-existence to the existence of an activity. See also the discussion following example (29) below.

The situation is markedly different for aspectual structures that incorporate a change of state in their meaning – the categories of achievement and accomplishment. This change of state is represented by (X) in (25), a boundary mediating two distinct states, in the case of achievements, or an activity and a resulting state, in the case of accomplishments. For achievements, the boundary may be an instant, as in the case of *tuk-u* ‘arrive’ and *sin-u* ‘die,’ where the boundary between being and not being in a particular location or being alive and not being alive has no extension in time, or it may be a bounded interval, as in the case of *yase-ru* ‘become thin’ and *tukare-ru* ‘become tired,’ where the boundary between the states of not being thin and being thin or not being tired and being tired cannot be seen as instantaneous, but rather involve incremental stages (Okuda 1977, 1978; Dowty 1979). For accomplishments, the change of state (X) represents the culmination of an activity at which point the activity ceases and a new state arises, as with *huku o ki-ru* ‘put on clothes,’ where (X) represents the simultaneous ceasing of the activity of putting on clothes and the onset of a new state, that of being clothed. Accomplishments typically involve contributions to aspectual meaning not only from the predicate itself, but from other elements in its clause, such as direct objects (as in the examples in (24D), or adverbial clauses (e.g., *eki made hasiru* ‘run to the station’) that impose a boundary on the activity represented by the predicate (“delimit” the activity in the sense of Tenny (1994)).

The qualitatively distinct character of the two states or situations mediated by the change of state (X) highlights a relationship of temporal sequence within aspectual structure itself that has a pronounced effect on the tense interpretation of predicates of this type. This follows from the fact that (X) at the heart of this aspectual structure, whether an instant or a bounded interval, does not allow for the possibility of Tsit to be identified with the topic time (TT) when TT is identified with the moment of speech (TU), as would be necessary for a literal present reading in the *RU* form. If (X) is a bounded interval, it will not fit within the moment of speech; if it is an instant, it is existentially impossible for the speaker to time his/her utterance with perfect precision to coincide with the instantaneous change-of-state event in the outside world. (X) must therefore be seen as disjoint from the moment of speech, either prior to or following it. The prior ordering of (X) to the moment of speech is covered by the past-tense *TA* form, leaving a future interpretation, where (X) follows the moment of speech, as the only interpretation possible for the *RU* form of predicates of this type (e.g., *Denki ga tuk-u* ‘The lights will go on.’). The literal present interpretation that state predicates receive in their *RU* form, by contrast (see Section 2), is a direct result of their subinterval property seen above in (26a), by which a state obtaining over an interval is also seen to obtain over any subinterval or moment within that interval. Predicating a state of the moment of speech, in which case Tsit, TT, and TU overlap, is no more than a special case of this general character of states, giving rise to a literal present interpretation. Activities, though similar to states in lacking a unique (X) component in their meaning, are not perfectly homogeneous, making it impossible to predicate them of instants of time such as the moment of speech. The bare non-past

*RU* form of activities will therefore receive a default future tense interpretation (e.g., *Kyoo wa puuru de oyogu* ‘I will swim in the pool today.’) just as do achievement and accomplishment predicates.

There is a further, fifth, category of eventive predicates called “semelfactives” exhibiting a situational aspect structure that does not match exactly any of the categories appearing in the Vendler/Kindaichi categorization in (24) (Comrie 1976, Smith 1997). Events expressed by semelfactives lack the extension in time of activities, instead describing events that are short and self-contained, sometimes approaching the duration of instants, much like achievements, illustrated in (24’E).

- (24’) E. Semelfactives: Take a *progressive* reading with *-tei(ru)*; accept *-ing* with progressive reading  
 E.g., *hiramek-u* ‘flash,’ *tatak-u* ‘knock,’ *mabataki su-ru* ‘blink,’ *kusyami o su-ru* ‘sneeze,’ *seki o su-ru* ‘cough’  
*Tooku no tiheisen ni inazuma ga kasuka-ni*  
 distant GEN horizon LOC lightning NOM faintly  
*hiramei-tei-ta.*  
 flash-PROG-PST  
 ‘On the distant horizon lightning was faintly flashing.’

Unlike achievements, however, semelfactive events do not form a boundary between different states – there is no difference in the state of affairs holding after a semelfactive event from that which held before it. The respective similarities and differences between achievements and semelfactives can be represented as in (28), where (X) represents a self-contained event that may approach an instant in time, bounding distinct states in the case of achievements but in the case of semelfactives bounded on either side by the same state of affairs.

- (28) Achievements: .....(X)———— (e.g. *tuk-u* ‘arrive’)  
 Semelfactives: ———(X)———— (e.g. *hiramek-u* ‘flash’)

The lack of any change of state component in the aspectual structure of semelfactives is reflected in the differing interpretation the two predicate types receive with *-tei(ru)*: with achievements, *-tei(ru)* indicates a state resulting from the achievement event (see (24D)), whereas with semelfactives *-tei(ru)* indicates a progressive-like iteration of multiple occurrences of the semelfactive event (see (24’E)). Under this progressive reading, semelfactives appear very close in character to activities, which themselves receive a progressive reading with *-tei(ru)* that arises from the multiple iteration of the atomic subcycles represented by (~) in (25). While activities in their bare form denote an iteration of atomic subcycles occurring as an aggregate over an extended interval of time, however, semelfactives in their bare form indicate a singular atomic event, as reflected in differing possibilities of co-occurrence with instantaneous temporal

adverbs such as *sono syunkan ni* ‘at that instant,’ which is possible with an activity predicate only in the achievement-like sense of ‘begin to ...’.

- (29) *Sono syunkan ni inazuma ga hiramei-ta/?odoriko ga*  
 that instant TMP lightning NOM flash-PST/dancing.girl NOM  
*odot-ta.*  
 dance-PST  
 ‘At that instant lightning flashed/?the dancing girl danced (possible under interpretation ‘began to dance).’

The presence of the bounded (X) in the aspectual structure of both semelfactives and achievements/accomplishments nevertheless has the same effect on the tense interpretation of predicates in the bare *RU* form: the impossibility of guaranteeing perfect overlap of (X) with the moment of speech will necessitate that the *RU* form of predicates in both these classes receive a future tense reading.

Relationships of temporal order are therefore present in all three temporal categories of tense, viewpoint aspect, and situation aspect. Ordering relationships in situation aspect are all internal to a singular structure that comprises the situation expressed by the predicate, as schematized in (25) and (28). With viewpoint aspect, these elements are brought into a special structural relationship with TT whereby the original structure is augmented or modified to incorporate TT as itself an element in a new structure, either internal to (as in the progressive use of *-tei(ru)*) or external to (preceding or following) the original structure (as with the prospective *-(y)ooto-su(ru)* and perfect use of *-tei(ru)*). With tense, TT is brought into an “pure” ordering relationship with TU where TU and TT are independent of any structural relationship binding the two, even if they happen to overlap in time, and regardless of whether TT is identified directly with the elements making up the situation of the predicate itself (so-called “simple tense” cases) or is part of a modified or augmented structure introduced by a viewpoint aspect form attached to the predicate (so-called “complex tense” cases). The order that ultimately obtains between TU, TT, and Tsit for any given predicate form will be determined by contributions to temporal meaning made by potentially any or all of these temporal categories interacting with one other. We have already seen how situation aspect and tense forms interact in the different interpretation given to the bare *RU* form of stative versus eventive predicates. In the next section we shift our focus to viewpoint aspect, and the question of how it interacts with situation aspect in determining such temporal ordering.



## 3.2 Aspectual categories: Viewpoint aspect

Research across a broad range of languages has demonstrated convincingly that the situational aspectual categories discussed in Section 3.1 are universal in character. In the case of viewpoint aspect, by contrast, with the exception of a handful of viewpoint aspectual categories that receive formal expression across a wide range of languages, such as progressive, perfect, and prospective aspect (Dahl 1985), there is a high degree of language-specific idiosyncrasy both in the types of meaning targeted for formal expression and in the kinds of grammatical strategies used to express that meaning. Grammatical forms expressing viewpoint aspect are, furthermore, frequently derived from linguistic forms that are themselves non-aspectual in function. While some of the features of meaning of these non-aspectual forms can typically be observed in the aspectual forms derived from them, other features of their meaning are lost in a process of semantic “bleaching.” This gives rise to another variety of language-specific idiosyncrasy, as there is wide variation among languages both in the kinds of non-aspectual meaning coopted for use in aspectual expression and in the degree to which aspectual forms derived from non-aspectual forms in this way exhibit semantic bleaching.

Linguistic forms used to express viewpoint aspect in Japanese can be broadly categorized into three types, morphological, syntactic, and lexical in character: (a) morphological verb linking, either of the gerund pattern *V1-te V2* or the verb compound pattern *V1-i/e V2*, where *V1* is the main verb and *V2* a verb expressing aspectual meaning; (b) periphrastic syntactic patterns such as exemplified earlier in the prospective *-(y)ooto-su(ru)* form; and (c) adverbs, such as *mada* ‘still’ and *moo* ‘already’. Of these, viewpoint aspectual forms of the gerund *V1te V2* gerund pattern occupy a central place of importance in the temporal system of Japanese, as measured not only in their frequency of use, but in the fact that categories of viewpoint aspect that are most broadly observed across languages, and lay the strongest claim to being universal, are expressed in this form in Japanese. Several key examples of this pattern are taken up in Section 3.2.1, and a brief survey of viewpoint aspectual forms of the remaining types is presented in Section 3.2.2.

### 3.2.1 Viewpoint aspect: *V1teV2* patterns

Given that viewpoint aspect acts to modify in some way the aspectual structure inherent to the meaning of a predicate, it stands to reason that viewpoint aspectual forms will place certain restrictions on the kinds of predicates they co-occur with and that the meaning expressed by the two in combination will be the product of a close interaction between them. For viewpoint aspectual forms of the *V1teV2* pattern, a prime example of this was seen earlier in Section 3.1 in the inability of *-tei(ru)* to co-occur with stative verbs, on the one hand, and in the two apparently distinct meanings it

exhibits with activity verbs and achievement verbs, progressive in the former case and resulting state (perfect) in the latter, as illustrated in (30).

- (30) a. *Kodomo wa niwa de ason-dei-ru.* (< *asob-u*, progressive)  
 children TOP back.yard LOC play-PROG-NPST  
 Tsit  $\supset$  TT  $\supset$  TU  
 ‘The children are playing in the back yard.’
- b. *Denki ga tui-tei-ru.* (< *tuk-u*, resulting state) Tsit < TT  $\supset$  TU  
 lights NOM turn.on-RES-NPST  
 ‘The lights are on.’ (Lit. ‘The lights are in a state of having turned on.’)

Despite this difference in meaning, the *tense* relationship in both (30a) and (30b) is the same literal present tense, as seen in the overlap between TT and TU in both cases. This is a feature the *-tei(ru)* form shares with stative predicates and may be seen to follow from a fundamentally homogeneous character it has in common with stative predicates. In (30a) and (30b), for example, the situations of *asonde-i-ru* ‘be playing’ and *tui-tei-ru* ‘be (in a state of having turned) on’ are seen to hold over an interval of time surrounding the topic time (here overlapping with the time of speech TU), and the same situation is in each case seen to hold over any subinterval of that interval, no matter how small, down to an instant.

Based on this, the aspectual function of *-tei(ru)* may be characterized as one of imposing on topic time the “viewpoint” of being surrounded by an interval of time that is aspectually homogeneous in this sense. But the way this interval is positioned will differ depending on the situation aspectual structure of the predicate to which it is attached. Since activities are inherently homogeneous in their aspectual structure (even if not perfectly so – see (25)), the interval imposed by *-tei(ru)* can subsume the activity within itself, as schematized in (31), where the interval imposed by *-tei(ru)* is indicated by the square brackets [ ] and topic time by TT, resulting in a progressive reading that views the activity as ongoing throughout the interval.

- (31)
- |                   |                                                                |
|-------------------|----------------------------------------------------------------|
| TT                |                                                                |
|                   |                                                                |
| ~~~~~[~~~~~]~~~~~ | (e.g. <i>Kodomo wa ason-dei-ru</i> ‘The children are playing’) |

With achievements, by contrast, the existence of the (X) that forms a boundary between two states (e.g. not being on and being on with *denki ga tuku* ‘the lights turn on’) creates an obstacle to imposing this interval: any interval containing this (X) will include subintervals in which different situations hold and will therefore not be homogeneous. The only possibility for placement of the interval imposed by *-tei(ru)* is therefore either prior to (X) or after (X), but in no case including the (X) itself. The first of

these possibilities is excluded because the *-te* in *-tei(ru)* requires the event expressed by the predicate to be “realized” (Soga 1983; McClure 1995), a historical relic of an older “perfective” meaning in this form, so that the only possibility is for the interval in question to be placed after the (X), yielding the resulting state meaning schematized in (32).

- (32)
- $$\begin{array}{c} \text{TT} \\ | \\ \text{-----}(X)\text{---}[\text{---}]\text{---} \end{array} \quad (\text{e.g. } \textit{Denki ga tui-tei-ru} \text{ ‘The lights are on.’})$$

Accomplishments, by contrast, having an aspectual structure composed both of an activity and an achievement component, provide two possible sites for the placement of the interval associated with *-tei(ru)*, resulting in either a progressive interpretation if the interval is positioned within the activity preceding (X) or a resulting state (perfect) interpretation if it is positioned within the state that follows (X). This is schematized in (33) for the accomplishment phrase *kimono o ki-ru* ‘put on a kimono.’

- (33) a. Progressive interpretation

$$\begin{array}{c} \text{TT} \\ | \\ \sim\sim\sim[\sim\sim]\sim(X)\text{---} \end{array} \quad (\text{e.g. } \textit{Kimono o ki-tei-ru} \text{ ‘(S/he) is putting on a kimono.’})$$

- b. Resulting state (perfect) interpretation

$$\begin{array}{c} \text{TT} \\ | \\ \sim\sim\sim\sim(X)\text{---}[\text{---}]\text{---} \end{array} \quad (\text{e.g. } \textit{Kimono o ki-tei-ru} \text{ ‘(S/he) has (put) on/is wearing a kimono.’})$$

Which of these two interpretations is received by *kimono o ki-tei-ru* will be determined by contextual or clausal elements that highlight one or the other of the activity and state components of the accomplishment aspectual structure. Co-occurrence with the locative form *tonari no heya de* ‘in the room next door,’ for example, which co-occurs exclusively with eventive predicates, will select the former, progressive, interpretation. Note that even for the progressive interpretation, the onset of the activity precedes the topic time, fulfilling the requirement that *-tei(ru)* express a realized state of affairs. The two apparently different interpretations that *-tei(ru)* receives are therefore the result of a singular viewpoint meaning in this form – imposing a homogeneous aspectual structure over an interval surrounding topic time – interacting with different types of situation aspect inherent to the co-occurring predicate.<sup>9</sup>

<sup>9</sup> For further discussion and examples of this interaction between the *-tei(ru)* form and situation aspectual structure of the co-occurring predicate, see Jacobsen 2016b.

Other uses of *-tei(ru)* than the progressive and resulting state can for the most part be seen as variants of one or the other of these two basic meanings. Variants on the use of *-tei(ru)* as a marker of resulting state are illustrated in (34). The standard use in (34a) carries the implication that the subject is at the time under discussion (topic time) in a state resulting from the event expressed by the predicate (here the state of being on the mountain resulting from the event *nobor-u* ‘climb, ascend’), an implication that is not present in the so-called “experiential” use in (34b) or the “historical record” use in (34c).<sup>10</sup>

- (34) a. *Ken wa ima Huzisan ni nobot-tei-ru.*  
 Ken TOP now Mt.Fuji GOAL climb-RES-NPST  
 ‘Ken is now on Mt. Fuji (having climbed it).’
- b. *Ken wa nido Huzisan ni nobot-tei-ru.*  
 Ken TOP two.times Mt.Fuji GOAL climb-RES-NPST  
 ‘Ken has climbed Mt. Fuji twice.’
- c. *Tabei Zyunko wa 1975-nen ni zyosei to-site hazimete*  
 Tabei Junko TOP 1975 TMP woman as for.first.time  
*Eberesuto ni nobot-tei-ru.*  
 Everest GOAL climb-RES-NPST  
 ‘Junko Tabei ascended Mt. Everest in 1975 for the first time as a woman.’

Example (34c) is remarkable for allowing a temporal adverb that specifies the time of the past event itself, an apparent example of two topic times – one tied to the event (Tsit), one to the time of speech (TU) via the operation of *-tei(ru)* – being incorporated into a single clause, pointing to an unusually high degree of integration involving three elements, Tsit and both TT’s, into an overarching aspectual structure.

As for progressive meaning, a variant on the standard progressive use of *-tei(ru)* illustrated in (35a) is the use in (35b), closely corresponding to the present perfect construction in English, where a time adverb is present making explicit the onset of the interval defined by *-tei(ru)*.

- (35) a. *Kasai keihoo ga nat-tei-ru.*  
 fire alarm NOM ring-PROG-NPST  
 ‘The fire alarm is ringing.’

<sup>10</sup> Despite the semantic affinity that exists between the resulting state, experiential, and historical record uses of *-tei(ru)*, the latter two uses are less constrained in the aspectual class of verbs with which they may co-occur. As noted in Takubo (2008), the resulting state use is only possible with achievement and accomplishment type verbs, whereas the other two uses are possible with non-stative verbs of any aspectual class.

- b. *Zyuppun mae kara kasai keihoo ga nat-teiru.*  
 ten.minutes before ABL fire alarm NOM ring-PROG-NPST  
 ‘The fire alarm has been ringing for 10 minutes (lit., since 10 minutes before).’

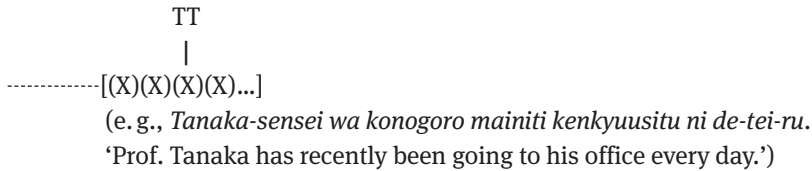
Another variant on the progressive is seen in various iterative uses of *-tei(ru)*. An achievement verb such as *de-ru* ‘appear’ will normally take a resulting state interpretation with *-tei(ru)* in default contexts such as (36a). But when the meaning of multiple occurrence is introduced by temporal adverbs, either through iteration of an event with the same subject, as in (36b), or with multiple subjects, as in (36c), the interpretation of *-tei(ru)* shifts in the direction of a progressive kind normally seen with activity verbs.

- (36) a. *Tanaka-sensei wa ima zyugyoo ni de-tei-ru.*  
 Tanaka-professor TOP now class GOAL appear-RES-NPST  
 ‘Prof. Tanaka is now in (lit., is in a state of having appeared in) class.’
- b. *Tanaka-sensei wa konogoro mainiti kenkyuusitu ni de-tei-ru.*  
 Tanaka-professor TOP recently every.day office GOAL  
 appear-PROG-NPST  
 ‘Prof. Tanaka has recently been going to (lit., appearing in) his office every day.’
- c. *Amerika de no zyuuransyaziken ga mainiti no yoo-ni nyuusu ni de-tei-ru.*  
 America LOC GEN mass.shooting.incident NOM daily GEN  
 like news GOAL appear-PROG-NPST  
 ‘Mass shooting incidents in America are appearing in the news almost daily.’

The shift from discrete occurrence of (X) in the garden variety use of achievement verbs, as represented in (37a), to multiple occurrence of (X), as in (37b), thus defines an interval which is sufficiently homogeneous in character to license a progressive-like interpretation (compare the aspectual structure of activities seen earlier in (31)).

- (37) a. Resulting state (perfect) interpretation
- TT  
|  
.....(X)—[——]——
- (e. g., *Tanaka-sensei wa ima zyugyoo ni de-tei-ru.*  
 ‘Prof. Tanaka is now in (has appeared in) class.’)

## b. Progressive (iterative) interpretation



All variants on the progressive use have in common that the interval imposed by *-tei(ru)* contains *within* it some portion of the activity or iterated event expressed by the predicate, as opposed to variants on the resulting state use, which are all characterized by the presence of the point or interval (X) defining achievement aspect positioned *outside* of and *prior* to the interval imposed by *-tei(ru)*.

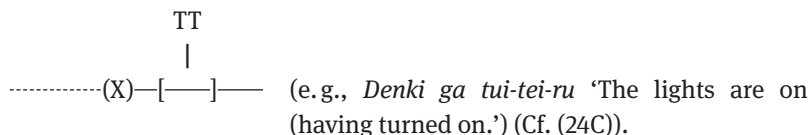
A second aspectual construction of the V1-*te*V2 type that shares with *-tei(ru)* the function of imposing a resulting state viewpoint is *-tear(u)*. Like *-tei(ru)*, *-tear(u)* requires that the accompanying predicate contain in its situation aspectual structure an interval bounding two distinct states, represented by (X) in the schemata of (25), but in the case of *-tear(u)* the resulting state is one purposely brought about by intentional action, typically expressed by a transitive verb with an object that is promoted to subject position in the *-tear(u)* construction. In the case of verbs that fall into intransitive/transitive pairs (see Section 4.1), the same resulting state can therefore be expressed either in the form of  $V_{in}$ -*tei(ru)* or  $V_{tr}$ -*tear(u)*, the former neutral as to how the state arose, the latter carrying the implication that the state was brought about for some intentional purpose, as in (38).

- (38) a. *Denki ga tui-tei-ru.*  
 lights NOM turn.on<sub>in</sub>-RES-NPST  
 ‘The lights are on (lit., in a state of having turned on).’
- b. *Denki ga take-tear-u.*  
 lights NOM turn.on<sub>tr</sub>-RES-NPST  
 ‘The lights are on (having been purposely turned on).’

In schematic terms, *-tear(u)* incorporates in its aspectual structure an accomplishment component combining both an activity and achievement component, as in (39a), in contrast to *-tei(ru)*, which minimally requires only an achievement component, as in (39b).

- (39) a. Resulting state (perfect) interpretation – result of intentional action
- $$\begin{array}{c}
 \text{TT} \\
 | \\
 \sim\sim\sim\sim(X)-[\text{---}]
 \end{array}$$
- (e. g., *Denki ga take-tear-u* ‘The lights are on (having been purposely turned on).’) (Cf. (24D))

- b. Resulting state (perfect) interpretation – result of pure change of state event

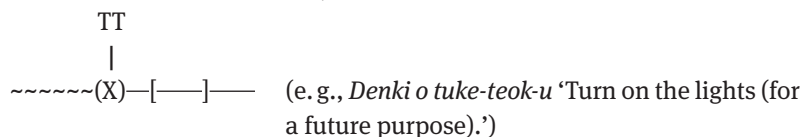


Complementary in meaning to *-tear(u)* is a third aspectual construction of the V1teV2 type, *-teok(u)*, derived from the independent verb *ok(u)* ‘put, place,’ one that introduces at TT the viewpoint of an action undertaken intentionally as preparatory to a later state. The state in this case corresponds to the same state as that highlighted in the corresponding *-tear(u)* construction. Parallel to the *-tear(u)* construction in (38b), for example, is the *-teok(u)* construction in (38c), where the viewpoint is placed at the time of the event bringing about the state in (38b), as opposed to the time of the resulting state itself.

- (38) c. *Denki o tuke-teoi-ta.* (*< tuke-teok-u*)  
 lights ACC turn.on<sub>tr</sub>-put-PST  
 ‘(I) turned on the lights (preparatory to some future purpose).’

*-Teok(u)* thus incorporates into its aspectual structure the identical accomplishment schema seen for *-tear(u)* in (39a), with TT shifted onto (X) itself, as in (39c). The square brackets [ ] here represent the future state intended by the action expressed in V1 and highlighted by the viewpoint aspect imposed by *-teok(u)*.

- (39) c. Intentional action preparatory to a future purpose



In terms of temporal ordering, the *RU* form of *-tear(u)* in (38b) is given a literal present interpretation where TT overlaps with TU (the time of speech), consistent with its stative character. Since the event giving rise to a state necessarily precedes it in time, the corresponding *-teok(u)* construction must therefore establish a viewpoint that is ordered prior to TU, requiring past tense marking with the *TA* form, as in (38c).

Each of the three gerund constructions discussed so far in this section, *-tei(ru)*, *-tear(u)*, and *-teok(u)*, preserves some features of meaning of the independent verbs *i-ru* ‘exist (of animate subjects),’ *ar-u* ‘exist (of inanimate subjects),’ and *ok-u* ‘put, place’ from which they are respectively derived, while at the same time exhibiting a fair degree of semantic bleaching. *-Tei(ru)* and *-te-ar(u)*, for example, share the meaning of stative existence with the independent verbs corresponding to them, but,

unlike their independent counterparts, are unrestricted in the animacy of their subjects. *-Teok(u)* preserves the character of preparatory action present in the independent verb *ok-u* ‘put, place,’ but is not restricted to the meaning of physical positioning as is the independent verb, allowing a full range of preparatory actions of a non-physical sort, such as *yonde-ok(u)* ‘read (in preparation for a future purpose).’

Such overlap between aspectual and non-aspectual meaning, with attendant semantic bleaching of an original non-aspectual verb, is illustrated in a particularly striking way in a fourth viewpoint aspectual pattern, the *-tesima(w)-u* construction, where the literal meaning of the independent verb *sima(w)-u* ‘put (something) away’ is coopted to express completion of an event in its entirety, up through the concluding stage, but also to mark events that are out of conscious control or undesirable in some sense, either for the subject or the speaker. The aspectual function of this pattern is illustrated in (40a), and the other two, non-aspectual, functions illustrated respectively in (40b) and (40c).

- (40) a. *Itinitibun no sigoto o wazuka sanzikan de*  
 one.day.amount GEN work ACC just 3.hours TMP  
*katazuke-tesimat-ta.* (< *simaw-ta*)  
 clear.away-put.away-PST  
 ‘I cleared away a whole day’s amount of work in just three hours.’
- b. *It-tewaikenai to wakari-nagara tui*  
 say-must.not QUOT know-though unintentionally  
*it-tesimat-ta.*  
 say-put.away-PST  
 ‘Even though I knew that I shouldn’t say it, I (ended up) saying it.’
- c. *Gakkimatu sikensyuu no saityuu ni hidoi kaze o*  
 semester.end finals.week GEN middle TMP bad cold ACC  
*hii-tesimat-ta.*  
 catch-put.away-PST  
 ‘I (unfortunately) caught a bad cold in the middle of semester-end finals week.’

Despite the apparent idiosyncrasy of this collocation of meanings, there is an internal logic that binds them together whereby the utter finality of completion of the event associated with the *aspectual* use of *-tesima(w)-u* is such that the event cannot be undone even if one wished it so, leading to the implication that the event is out of one’s control, and, by extension, contrary to one’s interests.



### 3.2.2 Viewpoint aspect: Other patterns

This section will present a brief survey of other representative examples of viewpoint aspect forms in each of the three patterns – verb linking, periphrastic, and adverbial – outlined in Section 3.2 besides the *V1teV2* gerund verb linking pattern considered in Section 3.2.1.

A second verb linking pattern commonly employed in viewpoint aspectual constructions in Japanese that differs slightly in its morphology from the *V1teV2* gerund pattern is the compound structure *V1-i/e V2*, *V1* here taking the form of an infinitive verb stem. This pattern is typically used to impose a viewpoint highlighting distinct stages internal to the temporal structure of the accompanying predicate, as illustrated in (41), where the independent verbs *hazime-ru* ‘begin<sub>tr</sub>’, *tuzuke-ru* ‘continue<sub>tr</sub>’, and *owar-u* ‘end, finish’ appear as *V2* to express the initial, medial, and final stages, respectively, of the event expressed in *V1*.

- (41) a. *Kasai keihoo ga nari {hazime-ta/tuzuke-ta/owat-ta}.*  
           fire alarm NOM ring- {begin-PST/continue-PST/finish-PST}  
           ‘The fire alarm {began/continued/finished} ringing.’  
       b. *Ronbun o kaki {hazime-ta/tuzuke-ta/owat-ta}.*  
           paper ACC write- {begin-PST/continue-PST/finish-PST}  
           ‘I {began/continued/finished} writing my paper.’

While there is a clear connection between the independent meaning of these verbs and the aspectual meanings they express in these constructions, semantic bleaching can be seen in the way that transitivity restrictions of the corresponding independent verbs are loosened in these aspectual constructions. *Hazime-ru* ‘begin<sub>tr</sub>’ and *tuzuke-ru* ‘continue<sub>tr</sub>’ in particular, are transitive in their use as independent verbs, requiring the presence of a direct object, but this restriction is lost in their use as aspectual forms, as seen in the freedom with which they co-occur with either intransitive or transitive predicates in the *V1* position in (41a) and (41b) above. Other compound-type aspectual patterns imposing a stage viewpoint in this way include *V1-das-u* ‘burst out *V1-ing*’, *V1-kake-ru* ‘begin doing *V1* (with implication of discontinuance)’, and *V1-age-ru* ‘do *V* completely’, where a high degree of semantic bleaching can again be seen in comparison with the corresponding independent verbs *das-u* ‘put out’, *kake-ru* ‘put in contact with,’ and *age-ru* ‘raise.’

Periphrastic patterns, where freely occurring independent words combined as constituents in syntactic constructions are employed rather than bound inflected forms, are another, if somewhat less common, linguistic device seen in Japanese for the expression of viewpoint aspect. The prospective pattern *V(y)ooto-su(ru)* ‘try to *V*, be about to *V*’ introduced in Section 2.2, is one example, where the inflected form *V(y)oo* expressing the meanings of volition and probability of occurrence ‘(I) will do *V*/let’s do *V*/*V* is probable to happen’ is put in construction with the quotative *to* form

and the independent verb *su-ru* ‘do’ to express the initiation of a process at topic time that possesses an inertia leading ultimately to the occurrence of V (see earlier examples of this pattern in (17)).

The parallel constructions *V-ru koto ga aru* ‘sometimes do V/V occurs’ and *V-ta koto ga aru* ‘have (the experience of having) done V/V has occurred,’ illustrated in (42), are a further example of a syntactic periphrastic pattern expressing viewpoint aspect.

- (42) a. *Kaisya ni de-nai-de uti de sigoto o su-RU*  
 office GOAL appear-NEG-GER home LOC work ACC do-NPST  
*koto ga ar-u.*  
 CMP NOM exist-NPST  
 ‘I sometimes do work at home, without going to the office.’
- b. *Kazoku o kaigai ni ture-teit-TA koto ga*  
 family ACC overseas GOAL take-go-PST CMP NOM  
*ar-u?*  
 exist-NPST Q  
 ‘Have you ever (lit., do you have the experience of having) taken your family overseas?’

These patterns exploit and extend the meaning of the verb *aru* ‘exist’ to express the occurrence of an event or events as a type of existence at TT, here overlapping with TU in a literal present interpretation as a consequence of the stative character of *aru*. In the pattern illustrated in (42a), *aru* takes as its subject the *RU* form of a verb *V* nominalized by the attachment of the complementizer *koto*, in which case the occurrence of the event(s) expressed by *V* are seen to themselves occur in an extended present, giving rise to the interpretation ‘sometimes *V* occurs.’ In the case of (42b), *aru* takes as its subject the *TA* form of the verb *V*, again nominalized by means of *koto*, in which case the occurrence of the event(s) expressed by *V* is in the past, giving rise to the experiential perfect interpretation ‘have the experience of (having done) *V/V* has occurred (in the past).’ Recall that experiential meaning is also one of the variations of perfect meaning expressed by *-tei(ru)*, (see (34b) in Section 3.2.1). Both constructions situate TT at a point in time later than Tsit and, in the case of a final *RU* form, overlapping with TU, but *V-ta koto ga aru* differs from *V-tei(ru)* in, among other things, requiring a larger gap between Tsit and TT, situating the event(s) of *V* in a more remote past (Soga 1983).

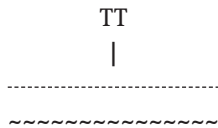
- (43) a. *Kinoo no uti ni sankai hodo ano mise*  
 yesterday GEN period TMP 3.times extent that store  
*ni it-tei-ru/ \*it-ta koto ga ar-u.*  
 GOAL go-RES-NPST/ go-PST CMP NOM exist-NPST  
 ‘Just yesterday (lit., within the period of yesterday I went (lit. have gone) to that store 3 times.’

- b. *Akatyan no toki ni nandoka sinzoo no syuzyutu*  
 baby GEN time TMP several.times heart GEN surgery  
*o si-tei-ru/ si-ta koto ga ar-u.*  
 ACC do-RES-NPST do-PST CMP NOM exist-NPST  
 'I had (lit., have had) heart surgery several times when I was an infant.'

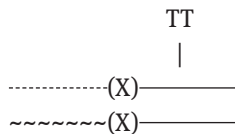
Despite the syntactic similarity of the *V-ru koto ga aru* and *V-ta koto ga aru* patterns in Japanese, the two receive very different formal expression in English, the former by means of a temporal adverb pattern 'sometimes V' and the latter in terms of the periphrastic construction 'have + past participle of V,' a clear example of the language-specific and idiosyncratic character of viewpoint aspect.

Temporal adverbs nevertheless play a significant role in aspectual expression in Japanese as well, not only in their function of specifying TT, as seen in Section 2.2, but in certain cases functioning as viewpoint aspect forms to impose an aspectual structure on the co-occurring predicate clause. A prime example of this is the adverb pair *mada* 'still' and *moo* 'already,' *mada* requiring that TT be preceded by an unchanging, homogeneous state of affairs over the interval of time relevant to the context and *moo* requiring that TT be preceded by a change from one state of affairs to another (Jacobsen 1983). *Moo*, that is, requires an aspectual structure where (X) in the schemata of (25) is present at some point prior to TT, and *mada* requires that (X) be absent from its aspectual structure, as represented in (44).

- (44) a. Aspectual structure of *mada* 'still'



- b. Aspectual structure of *moo* 'already'



*Mada* thus co-occurs naturally with predicates that themselves have no (X) incorporated in their inherent aspectual structure, such as states and activities.

- (45) a. *Soto wa mada kura-i.*  
 outdoors TOP still be.dark-NPST  
 'It's still dark outside.'
- b. *Suieibu no gakusei wa mada oyo-i-dei-ru.*  
 swim.club GEN students TOP still swim-PROG-NPST  
 'The students in the swim club are still swimming.'

But its ability to function as a marker of viewpoint aspect to impose aspectual structure can be seen in the fact that with predicates that *do* incorporate an (X) in their inherent aspectual structure, that (X) will be excluded from the meaning when *mada* is present. With accomplishments such as *ronbun o kaku* ‘write a thesis,’ for example, *mada* selects only the homogeneous progressive interpretation in the *-te-i(ru)* construction, even though this form otherwise licenses either a progressive or resulting state (perfect) interpretation, as in (46a). With achievements, *mada* will target only the resulting state in the *-tei(ru)* construction, excluding reference to the originating (X) where that is possible, such as with *denki ga tuk-u* ‘the lights turn on’ in (46b) and rejecting the predicate outright where reference to the (X) cannot be excluded from the meaning, as with *zyugyoo ga owar-u* ‘class ends’ in (46c).

- (46) a. *Ken wa mada ronbun o kai-tei-ru.*  
 Ken TOP still thesis ACC write-PROG-NPST  
 ‘Ken is still writing his thesis.’
- b. *Denki ga mada tui-tei-ru.*  
 lights NOM still turn.on-RES-NPST  
 ‘The lights are still on.’
- c. *\*Zyugyoo ga mada owat-tei-ru.*  
 class NOM still end-RES-NPST  
 ‘The class is still ended.’

*Moo*, by contrast, co-occurs naturally with eventive-type achievement and accomplishment predicates that inherently incorporate (X) into their aspectual structure.

- (47) a. *Zyugyoo wa moo owat-ta.* (Compare *Zyugyoo wa owat-ta.*)  
 class TOP already end-PST class TOP end-PST  
 ‘Class has already ended.’ ‘Class ended.’
- b. *Ken wa moo ronbun o kai-ta.* (Compare *Ken wa ronbun o kai-ta.*)  
 Ken TOP already thesis ACC Ken TOP thesis ACC write-PST  
 write-PST  
 ‘Ken has already written his thesis.’ ‘Ken wrote his thesis.’

Despite the use of the *TA* form here, note that the meaning of the examples with *moo* is not that the events expressed by the predicate – class finishing and Ken writing his thesis – *had* already occurred at a point in the past, but rather that they *have* already occurred at the present time. This follows from the aspectual structure imposed by *moo* that requires that TT be situated *later* than (X), the event expressed in each predicate here, resulting in an overlap of TT not with T<sub>sit</sub>, but with TU. *Moo* therefore selects the aspect-like interpretation of the *TA* form seen earlier in examples such as

(8) in Section 2.1, an interpretation that is only possible with change predicates that explicitly incorporate (X) into their meaning. Compare this with the corresponding examples without *moo* in (47), which receive a default ‘simple past’ interpretation where TT overlaps with Tsit.

As with *mada*, however, *moo* possesses the ability to impose its aspectual structure – that is, to introduce an (X) – even when it is not present inherently in the meaning of a predicate. This can be seen in the case of homogeneous stative and activity predicates, which *moo* does not reject, but rather refashions to be interpreted as resulting from an earlier change-event.

- (48) a. *Soto wa moo kura-i.*  
 outside TOP already be.dark-NPST  
 ‘It is already dark (i. e., has already become dark) outside.’
- b. *Suieibu no gakusei wa moo oyoi-dei-ru.*  
 swim.club GEN students TOP already swim-PROG/RES-NPST  
 ‘The students in the swim club are already swimming (i. e., have already started swimming)’ OR ‘The students in the swim club have already swum.’

As indicated by the English gloss here, the event of (X) in (48a) introduced by *moo* is that of *becoming* dark. In (48b) there are two options as to how (X) may be conceived, either as the onset time of the swimming, or as the time of completion of the swimming, reflected in the two distinct glosses indicated. The same two interpretations are seen, interestingly, in accomplishment constructions with *moo*, where an (X) is already present in the inherent aspectual structure of the predicate clause (see (25)). In that case *moo* may target either this (X) or introduce a new (X) corresponding to the onset time of the activity component of the accomplishment structure, resulting in the same two meanings as in (48b).

- (48) c. *Ken wa moo ronbun o kai-tei-ru.*  
 Ken TOP already thesis ACC write-PROG/RES-NPST  
 ‘Ken is already writing his thesis (i. e., has already started writing)’ OR  
 ‘Ken has already written his thesis.’

*Mada* and *moo* are thus capable of either imposing a layer of viewpoint aspectual structure directly on the situational aspect structure of a predicate, or adding a secondary layer of aspectual structure to an already existing layer of aspectual structure introduced by another viewpoint aspectual marker, such as *-tei(ru)*. Adverbs with such a viewpoint aspectual function are not large in number but are frequent in occurrence. Further examples include *sudeni* ‘already’ and *tokku ni* ‘long since,’ patterning with *moo* in requiring a characteristic (X) in aspectual structure, and *imada ni* and *izen to site*, both ‘still,’ patterning with *mada* in excluding such an (X) from aspectual

structure, and to these may be added adverbs of frequency such as *tokidoki* ‘sometimes,’ *yoku* ‘often,’ *tugitugi-to* ‘one after another,’ *metta ni* (with negative predicates) ‘hardly ever,’ functioning to either increase or decrease the number of (X) present in aspectual structure.

## 4 Interactions between temporal and non-temporal meaning

We have so far focused on the purely temporal categories of tense and aspect and their interaction in Japanese, although even in that context we have noted some peripheral interactions with non-temporal categories of meaning, such as in the coopting of verbs with non-aspectual meanings for use in viewpoint aspectual constructions. In the final sections of this chapter we turn our attention to interactions of a more systematic kind between temporal and non-temporal meaning, taking up transitivity and intentionality in the following section and realis vs. irrealis modality in the final section.

### 4.1 Transitivity, intentionality, and aspect

At the core of the Japanese verb system are over 300 pairs of morphologically related transitive and intransitive verbs (Jacobsen 1992, 2016a; Matsumoto 2016) that fall into sentence patterns such as the one illustrated in (49), where the *o*-marked accusative object of the transitive verb (*mado* ‘window’ in this example) corresponds to the *ga*-marked nominative subject of the intransitive verb.

- (49) a. *Ken ga mado o ake-ta.*  
           Ken NOM window ACC open<sub>tr</sub>-PST  
           ‘Ken opened the window.’
- b. *Mado ga ai-ta.*  
           window NOM open<sub>in</sub>-PST  
           ‘The window opened.’

One of the striking features of such pairs, first noted by Okuda (1977, 1978), is the differing aspectual behavior exhibited by the transitive and intransitive members of each pair, as reflected in the differing interpretation they receive with *-tei(ru)*. In default contexts, the transitive verb receives a progressive interpretation with this form, whereas the intransitive member receives a resulting state (perfect) interpretation.

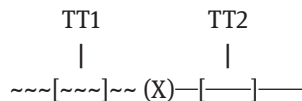
- (50) a. *Ken ga mado o ake-tei-ru.*  
 Ken NOM window ACC open<sub>tr</sub>-PROG-NPST  
 ‘Ken is opening the window.’
- b. *Mado ga ai-tei-ru.*  
 window NOM open<sub>in</sub>-RES-NPST  
 ‘The window is open (in a state of having opened).’

While the intransitive construction is with rare exceptions limited only to the resulting state interpretation, however, the transitive member is capable either of a progressive interpretation, or, given some contextual help, a resulting state (perfect) interpretation, as in (50c).

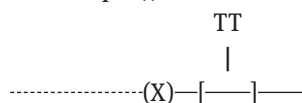
- (50) c. *Ken wa heya ni i-ru toki itumo mado o*  
 Ken TOP room LOC exist-NPST time always window ACC  
*ake-tei-ru.*  
 open<sub>tr</sub>-RES-NPST  
 ‘When he is in his room, Ken always has the window open (lit., has opened the window).’

This difference in behavior is accounted for naturally if we recognize the aspectual structure of transitive and intransitive constructions to be accomplishment-type and achievement-type, respectively (see Section 3.2.1). As illustrated in (51), the transitive accomplishment verb makes available two sites for the positioning of the homogeneous *-tei(ru)* interval surrounding topic time (TT1 for the progressive and TT2 for the resulting state interpretation in (51a)), in contrast to the intransitive achievement construction, which makes available only one such site (TT for the resulting state interpretation in (51b)).

- (51) a. Aspectual structure of transitive + *-tei-ru*  
 (e. g., *Ken ga mado o ake-tei-ru* ‘Ken is opening/has opened the window.’)



- b. Aspectual structure of intransitive + *-tei-ru*  
 (e. g., *Mado ga ai-tei-ru* ‘The window is open (lit. is in the state of having become open)).’



Both transitive and intransitive members of such pairs share in their aspectual structure the characteristic change of state (X) that licenses a resulting state interpretation with *-tei(ru)*, in (51) the change from the window being in a state of not being open to being open. This fact might suggest that the transitive and intransitive members are simply different ways of expressing the same event, but the event expressed by the transitive verb differs crucially in also having an intentional activity component in its meaning, represented by ~~~ in (51a), that leads up to and culminates in (X), whereas the meaning of the intransitive verb consists in the occurrence of the event (X) alone. The component of change is therefore more salient to the meaning of the intransitive verb than to the transitive verb, a salience that is reinforced by the fact that the entity undergoing change (*mado* ‘window’ in (51)) occupies the grammatically prominent position of subject in the intransitive, but not transitive, construction (Okuda 1977, 1978).

The correlation between intentionality and transitive expression seen in transitive-intransitive pairs is no coincidence, as intentionality is itself an inherently transitive phenomenon, requiring reference to both an intending agent and an intended event. As argued in Searle (1983), intentional (agentive) action in its prototypical form is comprised of an intention in the mind of a human agent (or other sentient being) to bring about an event involving change of some kind in the outside world, on the one hand, and the actual event of that change occurring, on the other, where the event intended is one caused by the intention itself. This duality is reflected in grammatical structure in the form of two distinct obligatory noun arguments taken by the transitive predicate, one corresponding to the intending agent (*Ken* in (49a)) and the other to an entity participating in the intended event, typically one that undergoes a change in state in the course of the event (*mado* ‘window’ in (49a)). In aspectual terms, since it is impossible for an intention in the mind and the event caused by it to occur with perfect simultaneity, intentional action will necessarily involve some extension in time. Events expressed by transitive verbs, even if short ones such as (*denki o*) *tuke-ru* ‘turn on (the lights),’ (*sara o*) *kowas-u* ‘break<sub>tr</sub> (a dish),’ and (*booru o gooru ni*) *ire-ru* ‘put (the ball into the goal)’ therefore have some temporal duration, in contrast to the instantaneity that characterizes the pure change events expressed by their intransitive counterparts, (*denki ga*) *tuk-u* ‘(lights) go on,’ (*sara ga*) *koware-ru* ‘(the dish) breaks,’ and (*booru ga gooru ni*) *hair-u* ‘(the ball) goes into (the goal).’

The durative character of intentional meaning becomes yet more pronounced when the delimitation imposed by the transitive object is removed, and only the pure activity component remains. This is so both with transitive constructions taking objects that impose no delimiting terminal point (X) on the event, such as *ziten-sya o osu* ‘push a bicycle,’ *kuruma o unten-suru* ‘drive a car,’ *terebi o miru* ‘watch TV,’ *kabe o sasaeru* ‘hold up a wall,’ etc., or with intransitive activity verbs such as *hasiru* ‘run,’ *oyogu* ‘swim,’ *aruku* ‘walk,’ *odoru* ‘dance,’ etc., that likewise involve no terminal point inherent to the meaning of the predicate. Predicates of both of these types are constrained to a default progressive interpretation with *-tei(ru)*, as in the (a) examples



in (52)-(53), unless an explicitly delimiting element is introduced to the clause that licenses a resulting state (perfect) interpretation, as in the (b) examples.

- (52) a. *Panku si-ta zitensya o osi-tei-ru.*  
 flat.tire do-PST bicycle ACC push-PROG-NPST  
 'I'm pushing a bicycle with a flat tire.'
- b. *Nando-mo beru o osi-tei-ru (kedo daremo dete-ko-na-i).*  
 many.times doorbell ACC push-RES-NPST but no.one  
 emerge-come-NEG-NPST  
 'I've pushed the doorbell many times (but no one comes to the door).'
- (53) a. *Uma ga kakoi no naka de hasit-tei-ru.*  
 horses NOM corral GEN inside LOC run-PROG-NPST  
 'Horses are running (around) in the corral.'
- b. *Boku wa kyoo dake de nizyukkiro mo hasit-tei-ru.*  
 I TOP today only LMT 20.kilo as.much.as run-RES-NPST  
 'I have today alone run a full 20 kilometers.'

The existence of intransitive activity verbs of the *hasiru* 'run' variety may seem inconsistent with the claim that intentional meaning is inherently transitive. Such intransitive verbs, however, exhibit in many respects the behavior of transitive verbs, not only in the interpretation they receive with *-tei(ru)*, but in their ability to enter into a wide variety of constructions such as imperative, passive, causative, and conative ('try to') that are rejected by intransitive verbs of the non-intentional achievement kind such as *aku* 'open<sub>in</sub>'.<sup>11</sup> They are also unique in not having transitive verb partners as do intransitive verbs of the latter kind. The apparent conflict between the syntactic intransitivity of these verbs and the transitive character of intentionality is resolved by the inherently dual role played by the argument subject of such verbs, which encodes *both* intending agent *and* entity undergoing change in a single entity. With *hasiru* 'run,' for example, the change intended by the agent subject is a series of motions of the legs on the body of the agent itself, giving rise to a *reflexive* meaning structure that reflects the inherently transitive character of intentional action (Jacobsen 1992, 1997).

In Section 3.1, the aspectual structure of activities was characterized as an iteration of subcycles, schematized as ~~~~, where each tilde ~ represents a single occurrence of the subcycle. Each subcycle in itself involves a terminal point, such as

<sup>11</sup> The distinction drawn here between intentional and non-intentional intransitives corresponds in essential respects to the unergative versus unaccusative distinction first pointed out by Perlmutter (1978).

completion of a characteristic sequence of leg motions in running, but viewed as an aggregate, the iteration of these subcycles takes on the character of a homogenous, unchanging situation. Each subcycle in this sense corresponds to an (X) defining the aspectual structure of an achievement verb, which, when iterated, shifts aspectually away from achievement structure toward activity structure, triggering a change in interpretation of *-tei(ru)* from resulting state to progressive (e.g., *terebi ni de-tei-ru* ‘is on TV (lit. is in the state of having appeared on TV)’ vs. *kono goro mainiti terebi ni de-tei-ru* ‘is recently appearing daily on TV’). At the opposite pole of activity meaning, contrasting with the ‘grainy’ quality of such iterative constructions, are progressive constructions such as those in (54) with an aspectual character so smoothly homogeneous as to be difficult to distinguish from unchanging states.

- (54) a. *Taoresoo ni nat-tei-ru hei o te de*  
collapse.appear DAT become-RES-NPST fence ACC hand INST  
*sasae-tei-ru.*  
hold.up-PROG-NPST  
‘He is holding up with his hand a fence that looks about to collapse.’
- b. *Seitotati wa kitin-to-sita sisei de tukue ni*  
students TOP orderly posture INST desks LOC  
*suwat-tei-ru.*  
sit-PROG-NPST  
‘The students are sitting at their desks with orderly posture.’

It may not be readily apparent how the individual subcycle events constituting the activity structure ~~~~ are to be identified in such cases. There is nevertheless a basic sense in which all durative situations of the activity sort, including those in (54), differ from stative situations. As noted by Comrie (1976), true states can be characterized as having an inertia of their own by which they continue indefinitely in time unless and until an external force is introduced that causes them to cease. Durative situations of the activity sort, by contrast, require a constant input of energy in order to persist in time, and the moment the input of energy ceases, the situation will cease. The source of the energy that sustains intentional activity is the repeated transmission of neural signals from the brain of the intending agent through nerve synapses to appropriate muscles in the body that either initiate various bodily motions, as in (53), or maintain various postural configurations of the body, as in (54). In the minimal case, these repeated neural signals transmitted by the brain constitute a series of micro change events, even in apparently static situations such as (54). In that sense, the aspectual structure of intentional action is never perfectly homogeneous as is the case with true states, as there will be at some level, however small, discrete change events that form the basic constituents of that aspectual structure. Such change events individually have some extension in time (in the minimal case, the time necessary for a neural

signal to be transmitted from the brain to a muscle) and, when iterated, take on additional duration in time, so that intentional meaning is in all cases characterized by a non-instantaneous interval of activity having some temporal duration.

While all intentional meaning, whether of the accomplishment sort or of the purely activity sort, incorporates in its aspectual structure a component of activity meaning, not all aspectual meaning of the activity variety is, conversely, intentional in nature.<sup>12</sup> There are numerous examples of progressive constructions exhibiting an activity-like aspectual character with subjects that are non-animate and lacking in intentionality, as in (55).

- (55) a. *Sigyoo no беру ga nat-tei-ru.*  
 start.of.class GEN bell NOM ring-PROG-NPST  
 ‘The bell is ringing for the start of class.’
- b. *Kaze ga hagesiku hui-tei-ru.*  
 wind NOM forcefully blow-PROG-NPST  
 ‘The wind is blowing forcefully.’
- c. *Suisyoo ga awai hikari o hanat-tei-ru.*  
 quartz NOM pale light ACC emit-PROG-NPST  
 ‘The quartz is emitting a pale light.’

Here again there is a range of “homogeneous” activity meaning, from the “grainy” type exemplified by the bell ringing, where the constituent micro events can be identified with individual strikes of the bell, to the smoother, more purely, homogeneous type exemplified by wind blowing and quartz emitting light, verging in the last case on the aspectual quality of stative meaning. Just as in the case of intentional progressive meaning, however, the situations expressed here are all ones that require a constant input of energy to maintain, and correlates to the synaptic micro-events defining activity structure of the intentional sort may even be seen in the discrete motions of individual molecules or photons of light that aggregately constitute natural phenomena such as wind blowing or light being emitted.

The energy required to maintain situations such as those in (55) is, furthermore, naturally seen to emanate from a force internal to the subject entities that is very similar in character to the force seen to emanate from an intending agent. Note the progression seen in the following examples from a random iteration of change events (water drops falling) to an iteration of change events that take on an activity-like pro-

<sup>12</sup> “Activity” is here intended in the aspectual sense of Vendler but may be misleading in that it encompasses both intentional and non-intentional varieties of meaning. The term “continuative” meaning (*keizoku no imi*) used by Kindaichi (1950) in his classification is neutral to that distinction and in that sense perhaps more appropriately expresses the sense intended here.

gressive character (rain falling, water flowing) as the subject entities in each case lose their distinct character (individual water drops) and come to be viewed as constituents of a larger, unified entity (a mass of water) to which it becomes possible to attribute an internal force.

- (56) a. *Nokisaki kara ame no sizuku ga potopoto-to*  
 eaves ABL rain GEN drops NOM in.drops  
*oti-tei-ru.*  
 fall-PROG-NPST  
 'Drops of rain are dripping (lit., falling) from the eaves.'
- b. *Ame ga potupotu-to hut-tei-ru.*  
 rain NOM in.drops fall-PROG-NPST  
 'It's raining (lit., rain is falling) in drops.'
- c. *Ame ga zaazaa-to hut-tei-ru.*  
 rain NOM in.torrents fall-PROG-NPST  
 'It's raining (lit., rain is falling) in torrents.'
- d. *Tanima no naka o ogawa ga nagare-tei-ru.*  
 valley GEN middle ACC brook NOM flow-PROG-NPST  
 'A brook flows (lit. is flowing) through the center of the valley.'

In aspectual terms, then, the notion of a controlling force, and by extension an intending agent, may be seen to emerge as a series of iterated change events become increasingly dense in occurrence and as the subject entities of those events lose their distinct identities and come to be viewed as a single entity that unifies, and by extension exerts control over, occurrence of those change events.

Intentional action, in summary, has an aspectual character that is at once durative, in contrast to achievements, and impermanent, in contrast to states. Its durativity stems from the inherently transitive character of intentionality, composed of both an intention to act internal to the intending agent and a change-event in the outside world that results from the intention, the two of which cannot occur simultaneously. This durativity is compounded in the case of typical activities by the iteration over time of constituent microevents that constitute those activities, in the minimal case involving transmission of a neural signal from the brain of the intending agent to a part of the body that moves in a way characteristic of the activity. Its impermanence stems from the fact that intentional activity is dependent on this kind of repeated input of energy to persist, and the possibility at any moment that the input may cease, causing the activity to cease. Intentional action is thus a phenomenon, non-temporal in itself, that defines unique temporal structures as it unfolds in time that are reflected in the aspectual behavior of predicates that express such meaning, whether of the accomplishment variety seen in transitive constructions with delimiting

objects, or the purely activity variety seen in non-delimited transitive and intentional intransitive constructions. In Section 4.2 we turn to another parameter of non-temporal meaning that likewise leaves its imprint on the aspectual behavior of predicates in a broad-ranging, systematic way, and that is whether a situation is seen to occur in real time or not.

## 4.2 Realis modality and aspect

Situations that are not actual, but merely desired, possible, or even negated, are typically expressed in Japanese with linguistic forms that are stative in their aspectual character. This can be seen in the examples in (57), each of which makes reference to an event *uti e kaer-u* ‘return home’ that does not, or does not necessarily, occur in the real world.

- (57) a. *Moo tukare-ta. Uti e kaeri-ta-i*  
 already become.tired-PST home GOAL return-DESI-NPST  
 ‘I’m tired. I want to go home.’
- b. *Kyoo wa moo zyugyoo ga na-i kara*  
 today TOP already classes NOM be.NEG-NPST because  
*itudemo uti e kaer-e-ru.*  
 anytime home GOAL return-POT-NPST  
 ‘I don’t have any more classes today, so I can return home anytime.’
- c. *Yoru no 12-zi na no-ni kodomo ga uti e*  
 night GEN 12:00 COP although child NOM home GOAL  
*kaette-ko-na-i.*  
 return-come-NEG-NPST  
 ‘It’s 12 midnight but my child isn’t home (has not come home) yet.’

The desiderative *-ta(i)* form ‘want to,’ the potential *-e(ru)* form ‘be able to,’ and the negative *-na(i)* form are all stative in character, as can be seen, among other things from the literal present interpretation they receive in their nonpast form in each of these examples. The desiderative and negative forms, in particular, are morphologically adjective forms, a class of predicates that is inherently stative. All of these auxiliaries are irrealis in character, meaning that they make reference in some way to a set of possible worlds, which may or may not include the real world, in which the attached proposition is true. (57a), for example, makes reference to a set of possible worlds that have the specific attribute of being desirable ones for the speaker in which the proposition *uti e kaer-u* ‘(I) return home’ is true. The meaning of *-ta(i)* is neutral as to whether that set will turn out to include or not include the real world, and the same is true of the meaning of the potential form *-e(ru)*. The negative form *-na(i)*, by con-

trast, explicitly excludes the real world from the set of worlds in which the attached proposition – in this case *kodomo ga 12-zi ni uti e kaette-kuru* ‘my child returns home at 12:00’ – is true. Not all stative sentences, of course, express non-actual states of affairs (the stative sentences considered in (1) in Section 2, for example, all express actual states of affairs), but the examples in (57) illustrate a tendency for predicate aspect to take on a stative character when reference to non-actual states of affairs is made.

Strong evidence for this correlation between non-actual meaning and stative aspect can be seen in conditional constructions in Japanese.<sup>13</sup> In contrast to the explicitly hypothetical meaning of the *if* construction in English, Japanese conditional constructions exhibit a wide range of meanings along a spectrum of hypothetical to non-hypothetical (actual), overlapping in meaning with both *if* constructions and *when* constructions in English. This is illustrated in the following examples involving the *-tara* conditional form, where the degree of hypothetical meaning can be measured by the degree to which the sentence accepts or rejects the hypothetical adverb *mosi* ‘if.’

- (58) a. *Ame ga hut-TARA siai wa tyuusi ni nar-u.*  
rain NOM fall-COND game TOP canceled DAT become-NPST  
(*mosi* OK)  
‘If it rains, the game will be canceled.’
- b. *Tanaka-kun ni at-TARA yorosiku tutaete-kure.*  
Tanaka DAT meet-COND well-wishes convey-give.me.IMP  
(*mosi* OK)  
‘If/when you see Tanaka, say hi to him for me.’
- c. *Kono sigoto ga owat-TARA nomi ni ik-u.*  
this job NOM finish-COND drink.INF PURP go-NPST  
(?*mosi*)  
‘If/when this job gets done, I’m going drinking.’
- d. *Raisyuu ni nat-TARA motto hima ni nar-u.*  
next.week DAT become-COND more free DAT become-NPST  
(*\*mosi*)  
‘When next week comes, I’ll be more free.’
- e. *Kusuri o non-DARA genki ni nat-ta.* (*\*mosi*)  
medicine ACC drink-COND well DAT become-PST  
‘When I took the medicine, I got better.’

13 For a more in-depth treatment of conditional constructions in Japanese, see Takubo (this volume).

(58e) is an example of a “factive” variety of conditional construction expressing a sequence of events that actually occurred in the past, a construction that is, interestingly, subject to the constraint that the consequent event cannot be one that is under the control of, and is therefore typically a surprise to, the human subject of the antecedent clause (Kuno 1973).

Hypothetical propositions are ones whose truth value, true or false, is, at the time of speech, either indeterminate or false, contrary to what is known to be the case. A speaker saying (58a), for example, does not know, at the time of speech whether or not *ame ga hur-u* ‘it rains’ is a true proposition at some relevant time in the future of the real world of the speaker. Framed in terms of possible worlds, a hypothetical proposition is one that is true in one or more members of a set of possible worlds that may, but does not necessarily, include the real world of the speaker. This set of possible worlds is typically defined by differing courses of events (histories) branching out from the present into the future, as in examples (58a) to (58c) above, but may also be defined by courses of events branching out from some time in the past, constituting alternative, though non-actual, histories to what is known to have actually occurred in the past of the real world. Such is the case with counterfactual conditional constructions of the kind illustrated in (59).

- (59)      *Ku-ru*            *to*                    *sit-tei-TARA*            *tyanto-sita* *syokuzi* *no*  
              come-NPST QUOT        know-RES-COND    proper        meal        GEN  
              *yooi*            *o*        *site-age-ta*            *no-ni*.  
              preparation ACC do-give.you-PST    SFP  
              ‘If I had known that you were coming, I would have prepared a proper  
              meal for you.’ (*mosi* OK)

Counterfactuals thus express a special kind of hypothetical meaning where the set of possible worlds in which the propositions of the antecedent (conditional) and consequent clauses are seen to be true specifically exclude the real world of the speaker.

A correlation between hypothetical, irrealis modality and stative aspect can be seen in numerous phenomena in Japanese conditionals. In future conditional contexts, first, the use of a stative predicate correlates with a distinctly stronger hypothetical sense than an eventive predicate of similar meaning.

- (60) a. *Hima*        *ni*        *nat-TARA/*            *hima*        *ga*        *at-TARA*  
              free.time DAT become-COND free.time NOM exist-COND  
              *asob-i*        *ni*        *ik-u*.  
              visit-INF PURP go-NPST  
              ‘I’ll come over for a visit when I’m free/if I have free time.’

- b. *Robii ni Orisaka to-iu hito ga ki-TARA*  
 lobby LOC Orisaka QUOT-say person NOM come-COND  
*/i-TARA kono syorui o watasite-kure.*  
*/exist-COND these documents ACC hand.over-give.me.IMP*  
 'If/when a person called Orisaka comes to the lobby/if there is a person  
 called Orisaka in the lobby, give these documents to him/her for me.'

The situations expressed by the eventive achievement verbs *nar-u* (*nat-TARA*) 'become' in (60a) and *ku-ru* (*ki-TARA*) 'come' in (60b) are more naturally interpreted as situations that are expected by the speaker to occur than the situations expressed by the stative predicates *ar-u* (*atTARA*) 'exist (inanimate)' and *i-ru* (*iTARA*) 'exist (animate)', which are purely hypothetical and neutral to any such expectation.

A second example of this correlation between irrealis modality and stative aspect is seen in the "factive" type of conditional construction illustrated earlier in (58e), which reject predicates to the degree they express permanent, unchanging states (Kuno 1973).

- (61) a. *Kaeri no densya ni not-tei-TARA zisin*  
 way.home GEN train GOAL get.on-RES-COND earthquake  
*ga oki-te densya ga tomat-ta.*  
 NOM occur-GER train NOM stop-PST  
 'When (as) I was riding on the train on my way home an earthquake  
 occurred and the train stopped.'
- b. *Okane ga na-kute komat-tei-TARA aru hi*  
 money NOM be.NEG-GER be.in.trouble-RES-COND one day  
*negat-temo na-i sigoto ni aritui-ta*  
 ask.for-even be.NEG-NPST job GOAL stumble.onto-PST  
 'When (as) I was out of money and in a bad situation, I stumbled one day  
 onto a job like none I could have asked for.'
- c. *??Kankokugo ga hanas-e-TARA minna*  
 Korean NOM speak-POT-COND everyone  
*kansin-site-kure-ta.*  
 be.impressed-do-give.me-PST  
 'When I was able to speak Korean, everyone was impressed.'
- d. *\*Kanemoti dat-TARA ippai tomodati ga deki-ta.*  
 rich COP-COND many friends NOM come.to.exist-PST  
 (Intended meaning) 'When I was wealthy, I made many friends.'

The predicates in all of the antecedent clauses of the examples in (61) express a homogeneous, stative-like situation, but those in (61a) and (61b) express more changea-



ble, impermanent states, corresponding to “stage-level” predicates in the sense of Carlson (1989), in contrast to the more permanent, unchanging states of the kind appearing in (61c) and (61d), corresponding to Carlson’s “individual-level” predicates. As the last two examples show, truly stative predicates resist occurrence in this context of actual occurrence. Note that (61d) would be acceptable under a counterfactual interpretation ‘If I had been wealthy, I would have made many friends,’ an interpretation that becomes more natural if the counterfactual particle *no-ni* is attached at sentence end.

By explicitly excluding the real world from the set of possible worlds under consideration, counterfactual conditionals express situations that are the most remote from the actual world, and are therefore highest in their degree of hypotheticality among conditional sentence types. Significantly, such constructions exhibit a particularly strong affinity with stative aspect in Japanese, seen in the tendency for predicates in such constructions to take the stative-like *-tei(ru)* form, imparting to the construction a particularly strong sense of remoteness from the real world.

- (62) a. *Motto benkyoo-si-TEI-TARA siken ni ukat-TEI-TA daroo-ni*  
 more study-do-STAT-COND exam DAT pass-STAT-PST TENT  
 ‘If he had studied more he undoubtedly would have passed the exam.’
- b. *Itumo no zikan ni uti o de-TEI-TARA densya*  
 usual GEN time TMP house ACC leave-STAT-COND train  
*ni maniat-TEI-TA no-ni.*  
 DAT make-STAT-PST SFP  
 ‘If (we) had left home at the usual time, we would have made the train.’

A correlation between stative aspect and irreal modality – inclusion of reference to possible worlds other than the actual world – can thus be seen widely across both main clause contexts and subordinate conditional contexts in Japanese.

A clue to an account of this interaction is suggested in the analysis of counterfactuals proposed by Iatridou (2000), who notes a tendency across a wide range of languages such as Greek, Hindi, French, and English for counterfactual hypotheticality – a sense of remoteness from the actual world – to be heightened through the combined use of the past tense and imperfective aspect (of which stativity is one type). In the following three examples adapted from Iatridou for English, and provided with Japanese counterparts, note the increased sense of remoteness that accrues in English with use of the past tense form *took* in (63b), and additionally so with the “past of a past” *had taken* construction in (63c), and in the corresponding Japanese examples, the presence again of the stative-like *-tei(ru)* form in (63c) expressing the highest degree of counterfactual remoteness.

- (63) a. *Kono kusuri o non-DARA genki ni nar-u.*  
 this medicine ACC drink-COND healthy DAT become-NPST  
 'If he takes this medicine, he will get better.'
- b. *Kono kusuri o non-DARA genki ni nar-u*  
 this medicine ACC drink-COND healthy DAT become-NPST  
*no-ni.*  
 SFP  
 'If he took this medicine he would get better.'
- c. *Kono kusuri o non-DEI-TARA genki ni*  
 this medicine ACC drink-STAT-COND healthy DAT  
*nat-TEI-TA no-ni.*  
 become-STAT-PST SFP  
 'If he had taken this medicine he would have gotten better.'

In the languages discussed by Iatridou, sentences corresponding to those in (b) and (c) exhibit a combination of imperfective aspect and past tense. Iatridou discounts the role of aspect in heightening such meaning, focusing on the past tense as responsible for such meaning by virtue of an "exclusion feature" carried by that form that excludes reference to the present *time* of the speaker and, by extension, excludes reference to the actual *world* of the speaker as well.

Japanese presents clear evidence, however, that aspect can play an equally significant role in imparting a counterfactual sense of remoteness from the real world. In Jacobsen (2002a, 2002b) I proposed that imperfective aspect (and stative aspect in particular) functions in a parallel but converse way to the exclusion feature of past tense to *include* times other than topic time (the "time of the speaker") and, by extension, to include worlds other than the actual world of the speaker. The temporal character of this inclusion feature is evident in the way that states are always seen to hold over an interval surrounding topic time, however small, in such a way as to include times other than the topic time itself. This is the case either with lexically stative predicates as in (64a) or constructions formed with *-tei(ru)* where a stative interval is imposed as viewpoint aspect, whether of the resulting state (64b) or progressive (64c) variety. In each case, the situation expressed is seen to involve times outside of the topic time (in these examples, overlapping with the time of utterance) of the speaker.

- (64) a. *Yane no ue ni risu ga i-ru.*  
 roof GEN top LOC squirrel NOM exist-NPST  
 'There is a squirrel on the roof.'
- b. *Yuka ni saihu ga oti-tei-ru.*  
 floor LOC wallet NOM fall-RES-NPST  
 'There is a wallet on the floor (lit., a wallet has fallen on the floor).'

- c. *Ame ga hagesiku hut-tei-ru.*  
 rain NOM hard fall-PROG-NPST  
 ‘It’s raining hard.’

Stativity, in other words, is characterized by an aspectual feature comprising multiple times that is capable of taking on a modal function of reference to multiple worlds. This set of multiple worlds, as seen earlier in modal constructions such as potential *-e(ru)* and desiderative *-ta(i)* as well as hypothetical stative conditionals, does not necessarily exclude the actual world, although it may do so as in the case of the negative *-na(i)* construction and counterfactual conditional constructions. In languages such as Greek where both imperfective aspect and past tense participate in counterfactual meaning, the exclusion feature and inclusion feature may be seen to complement one another by both including worlds other than the actual world and at the same time excluding the actual world from that set.

The correlation between multiple times and multiple worlds is in fact a wide-ranging phenomenon in Japanese that extends beyond the stative constructions considered so far. One example is the conditional verb form *-ba*, which is exclusively hypothetical in function, in contrast to the *-tara* conditional considered earlier. In future conditionals such as (65), for example, the use of *-ba* is neutral with regard to the likelihood that the event in the antecedent clause will be realized, while the corresponding *-tara* constructions carries with it an expectation of that event being realized.

- (65) *Kono sigoto ga owat-TARA/owar-eBA nomi ni*  
 this job NOM finish-COND finish-COND drink-INF PURP  
*ik-u.*  
 go-NPST  
 ‘When (TARA)/if (BA) this job gets done I’ll go drinking.’

As would be expected from its hypothetical character, *-ba* cannot be used in the “factive” type of conditional seen earlier in (58e) to be possible with *-tara*, which encodes a sequence of events that has actually occurred in the real world.

- (66) *Kusuri o non-DARA/ \*nom-eBA genki ni nat-ta.*  
 medicine ACC drink-COND drink-COND healthy DAT become-PST  
 (Intended meaning) ‘When I took the medicine, I got better.’

But there is a crucial class of exceptions where the *-ba* conditional may be used in contexts of actual occurrence, and that is where the sequence of events expressed is iterated multiple times.

- (67) a. *Dokusin no koro wa mainiti sigoto ga owar-eBA*  
 single GEN time TOP everyday work NOM finish-COND  
*nom-i ni it-ta mono-da.*  
 drink-INF PURP go-PST matter-COP  
 'Back in my single days, everyday when work was finished I would go drinking.'
- b. *Maiasa me ga same-reBA kanarazu Poti ga*  
 every.morning eye NOM open-COND always Pochi NOM  
*beddo no waki de boku o mat-tei-ta.*  
 bed GEN side LOC me ACC wait-PROG-PST  
 'Every morning when I woke up Pochi would be waiting for me at my bedside.'

Similarly, *nomeBA* 'drink-COND' in the earlier example (66) becomes acceptable under an iterative interpretation 'whenever I took the medicine I would get better,' or under a counterfactual interpretation 'if I had taken the medicine, I would have gotten better,' the latter interpretation considerably more natural if the sentence final particle *no-ni* is attached. The *-ba* form thus combines the two functions of hypothetical meaning – reference to multiple worlds – with iterative meaning – reference to multiple times. Interestingly, exactly the same two meanings are combined in English *would*, as seen in the glosses above for the two possible interpretations of *nomeBA* in (66), suggesting that the relationship between these two meanings is more than an accidental feature of Japanese.

The collocation of iterative and hypothetical functions can also be seen in constructions built on the *-temo* and *-tewa* verb forms. As seen in (68), *-temo* combines hypothetical meaning of the concessive type 'even if' (68a) together with reference to multiple times of occurrence, either of a single iterated event (68b), or of a series of events that approaches the extreme end of some scale of meaning (68c).

- (68) a. *Ame ga hut-TEMO siai wa tyuusi ni nar-ana-i.*  
 rain NOM fall-even.if game TOP cancel DAT become-NEG-NPST  
 'Even if it rains the game will not be canceled.'
- b. *Arat-TEMO arat-TEMO simi wa tore-na-katta.*  
 wash-even.if wash-even.if stain TOP come.off-NEG-PST  
 'Even though I washed it and washed it the stain wouldn't come off.'
- c. *Donna-ni hatarai-TEMO zyoosi ni sono doryoku wa*  
 how.much work-even.if boss DAT that effort TOP  
*mitomete-mora-e-na-katta.*  
 recognize-receive-POT-NEG-PST  
 'No matter how hard I worked I couldn't get my boss to recognize my efforts.'

Similarly, the *-tewa* form combines a particular type of hypothetical conditional meaning – one that is associated with a negative consequence, as in (69a), with the function of presenting a sequence of events in the antecedent and consequent clauses that occurs repeatedly, as in (69b).

- (69) a. *Kono himitu ga bare-TEWA taihen-na koto ni*  
           this secret NOM leak-COND terrible thing DAT  
           *naru- (kara koko dake no hanasi ni*  
           become-NPST because here only GEN matter DAT  
           *site-kure).*  
           make-give.me.IMP  
           ‘Things will be a real mess if this secret gets out, (so keep it between us).’<sup>14</sup>
- b. *Tabe-TEWA ne-ru, tabe-TEWA ne-ru, to-iu*  
    eat-ITER sleep-NPST eat-ITER sleep-NPST QUOT-say  
    *mainiti da.*  
    every.day COP.NPST  
    ‘All I do every day is eat then sleep, eat then sleep, over and over.’

Linguistic forms that make reference to multiple times, whether in the form of an iterated occurrence of events or by means of an aspectual structure that inherently comprises multiple times, as is the case with stative aspect, thus commonly take on a modal function of expressing hypothetical meaning as well. This can be naturally accounted for in terms of a semantic extension from times to worlds: just as reference to multiple times encompasses times outside the topic time of the speaker, reference to multiple worlds by extension encompasses worlds outside the actual world of the speaker. Aspectual structure comprising multiple times, whether of the stative or iterative variety, forms a stark contrast to the singular, unique time of the change event (X) that defines aspectual structure of the achievement type (see (25) in Section 3.1). This change event inherently imposes an ordering relationship between two states of affairs, one preceding and one following the change, producing an effect of forward movement in time, just as on the cognitive level perception of change in the world is a requisite condition to the experience of passage of time itself. The uniqueness of the time of this change event extends naturally to uniqueness of the world in which it occurs – i. e., the real world – in a parallel but inverse way to that seen with iterative and stative predicates, accounting for the higher realis (lower hypothetical) interpretation that achievement predicates receive by default in comparison to stative pred-

<sup>14</sup> Yukinori Takubo (p.c.) finds the hypothetical adverb *mosi* ‘if’ to sound unnatural with many uses of the TEWA construction, including example (69a). Although native speakers appear to vary in this judgment, I do not at present have an account for why the TEWA construction should differ from other hypothetical conditional constructions in this respect.

icates in future conditionals constructions such as those seen in (60) earlier in this section. The presence or absence of an element of change plays in this way a central role in mediating the systematic and broad-ranging interrelationship we have seen to exist between temporal and modal meaning in Japanese.

## 5 Summary and conclusion

Japanese is a language rich in forms expressing temporal meaning of various kinds. Every clause final predicate must at minimum be marked by one of the opposing forms *RU* and *TA*, which in main clauses have the default function of ordering the time of the situation expressed (Tsit) relative to the time of utterance (TU), either overlapping with or later than TU (*RU*) or earlier than TU (*TA*), but may in subordinate clauses order the time of the situation expressed relative to the topic time (TT) of the main clause. Various differences in the behavior of these forms from tense markers in English and other western languages – such as their behavior in subordinate clauses – have given rise to the view in certain quarters of the native Japanese grammatical tradition that these are not markers of tense, but rather aspect. Conceiving of tense as in its essence a relationship of temporal *ordering*, we have argued in this chapter that, contrary to this view, all uses of *RU* and *TA* involve temporal ordering relationships of some kind, even if not necessarily always oriented relative to the time of utterance. Aspect, by contrast, is a matter of the temporal *structure*, or lack of it, that events or situations define as they unfold in time.

Given, however, that temporal structure on a unidimensional time line will necessarily entail relationships of ordering, either among constituent elements internal to that structure, or between that structure and points in time outside the structure, and, conversely, that elements ordered with respect to each other may, given the right conditions, come to be viewed as constituent elements of a larger overarching temporal structure, the boundary between tense and aspect is a fuzzy one, and numerous possibilities exist for the territory of meaning of one of these categories to encroach on that of the other. The situation is complicated by the fact that the temporal ordering of time of utterance and time of situation expressed is not a direct one but is mediated by what Klein (1994) calls topic time (TT), the time under discussion in the context of the utterance. In the case of *RU* and *TA*, certain uses involve the overlapping of TT with TU (E. g., *Onaka ga suiTA* ‘I’m hungry (lit. my stomach has become empty)’)) rather than the overlapping of TT with Tsit seen in garden variety simple past uses (E. g., *Kinoo zisin ga okiTA* ‘An earthquake occurred yesterday’). In the former case, the temporal structure of the situation in the predicate is modified by the imposition of an overarching structure tying together the situation in the predicate with the later TT, giving the use of *TA* an aspectual character lacking in the latter, where the distinction maintained between TT and TU imparts a more purely tense-like character to the

construction. It is, however, the latter use that is more frequent and typical of constructions in *TA* (and, correspondingly, for *RU*, parallel examples for which were considered in Section 2.2), pointing to the basic function of *TA* and *RU* as one of marking tense.

Modification of the temporal structure of the situation expressed by the predicate in this way is formally marked in the case of viewpoint aspect forms such as *-tei(ru)* and *-(y)ooto-su(ru)*, both of which impose a particular order between TT and the situation expressed in the predicate and, at the same time, integrate TT as an element of the modified aspectual structure. Structure and ordering are also both present in situation aspect, the temporal structure inherent to the meaning of a predicate, although ordering relationships are particularly salient when a moment or interval of change, (X) in the schemata of (25), is present in that meaning. Relationships of ordering are therefore present in both tense and aspect, but the distinction between these two lies in whether the ordered elements are also structurally integrated with each another, either inherently, as in situation aspect, or by means of a modified structure that integrates TT as an element in the structure, as in viewpoint aspect. Tense, by contrast, involves in its purest form relationships of ordering between temporal elements that are structurally distinct from one another. The fact that tense, in contrast to aspect, typically takes on the deictic function of ordering a linguistic situation with respect to the time of utterance of the speaker can be seen to follow from the fact that the speech act itself is fundamentally distinct in character from, and situated outside of, the situation expressed linguistically.

Contributions from all three categories of tense, situation aspect, and viewpoint aspect are present in the expression of temporal ordering. Interactions between tense and situation aspect can be seen in the differing interpretation given to the *RU* form with stative versus eventive predicates – literal present in the former case versus future in the latter case. Interactions between situation aspect and viewpoint aspect are particularly rich and varied in Japanese, as exemplified in the differing interpretations – progressive and resulting state (perfect) – exhibited by *-tei(ru)* constructions, which arise from the interaction of a single function in *-tei(ru)* – that of imposing a homogeneous interval around topic time – with different situational aspectual structures. The presence of a moment or interval (X) marking a change of state is the crucial factor required for the resulting state interpretation, its presence functioning to contribute not only aspectual structure, but also a temporal order between the homogeneous interval and the prior occurrence of (X) itself.

This chapter considered, finally, various ways in which temporal categories of meaning interact with nontemporal categories of meaning in Japanese. Viewpoint aspectual forms, which exist in a wide variety in the language and exhibit a high degree of idiosyncrasy both in the kinds of meaning targeted for formal expression and the formal means for expressing the meaning (morphological, syntactic, or lexical), are frequently derived from linguistic forms having a nontemporal meaning through a process of semantic bleaching, as we saw in a comparison of the meaning of

the *-tei(ru)*, *-tear(u)*, *-teok(u)*, and *-tesimaw(u)* constructions and the meaning of the independent verbs from which each of these constructions is derived. Interactions of a more systemic kind between temporal and nontemporal meaning can be seen in the correlation between transitivity and (accomplishment) aspect, between intentionality and durative or iterative meaning, and, finally, between modality and stative or iterative aspect. This interaction between modality and aspect can be accounted for in terms of a semantic extension from times (temporal meaning) to worlds (modal meaning), one in which the presence or absence of a unique change component (X) in aspectual structure plays a central mediating role, just as it does in mediating interactions among temporal categories of meaning.

The rich and wide-ranging interactions we have considered between temporal meaning of various kinds and between temporal and non-temporal meaning in one language within the limitations of this one chapter are reflective of how deeply concepts of time are embedded at the core of human language and cognition itself, mediating in fundamental ways the human experience of the world. Limitations of time and space have not allowed us to take up other areas of such interaction in Japanese, such as the interaction between temporal meaning and the expression of subjectivity seen in the dichotomy between stative categories used in expressing the thoughts and feelings of the inner world of the speaker versus eventive categories used in expressing events in the world outside of the speaker, including the thoughts and feelings of other people. It is hoped that the observations and analyses presented in this chapter will serve as a catalyst for further inquiry leading to the discovery of yet unidentified phenomena of such interaction between time and other categories of meaning, both within the Japanese language and beyond, and to an understanding of the degree to which the ideas presented in this chapter are of limited, language-specific relevance to Japanese or point to universal tendencies in the way time is expressed across all human languages.

## Additional abbreviations

CAUS – cause, GOAL – goal, in – intransitive, LMT – limit, NPST – nonpast, POT – potential, TENT – tentative, TMP – temporal, tr – transitive

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## 7 Formal treatments of tense and aspect

### 1 Introduction

This chapter is concerned with formal analyses of the Japanese system of temporal expressions. Its dual goal is to give an overview of some of the main themes and open problems in the literature on this topic, while also giving a clear idea of the analyses that have been proposed. For the sake of coherence, I will follow one particular strategy of interpretation throughout, mentioning comparisons with other approaches along the way. It would be overly ambitious to aim for an exhaustive account of the research in this survey chapter. My hope is that the reader will be equipped with the necessary background to explore the topic in more depth on his or her own, consulting the literature cited.

#### 1.1 Tense and aspect

The categories of tense and aspect are closely related and can be hard to separate. One commonly held view is that while both have to do with the temporal characteristics of the events or situations that sentences refer to and speakers talk about, tenses are about the temporal *location* of those events or situations, whereas aspects are about their temporal *structure* (Johnson 1981; Comrie 1976, 1985; Michaelis 2002; Binnick 2012; Bohnemeyer 2014, among many others). This view is exemplified in Comrie's (1976) working definitions in (1),<sup>1</sup> which have been influential in the linguistic literature on Japanese (Ogihara 1999, i.a.).

- (1) a. Tense relates the time of the situation referred to to some other time, usually to the moment of speaking. (Comrie 1976: 1–2)
- b. [A]spects are different ways of viewing the internal temporal constituency of a situation. (Comrie 1976: 3)

As the statement in (1a) makes clear, tenses are essentially *relational*, locating the time in question relative to some temporal vantage point. Comrie leaves room for variation as to what that vantage point can be. When it is the speech time, the interpretation is *absolute*, or deictic. But *relative* interpretations are also possible, for instance from the

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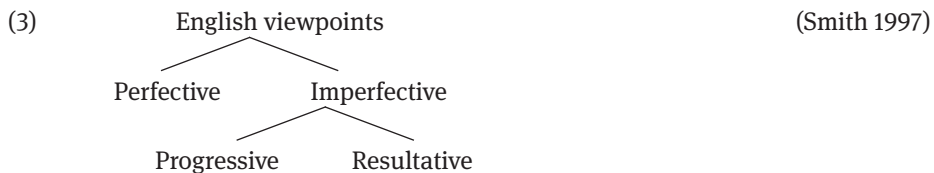
<sup>1</sup> Comrie refers to Lyons (1968) and Holt (1943), respectively, for background on these notions.

perspective of the reference time of a matrix clause under which the tense in question is subordinated. It is worth noting that in this sense both absolute and relative tense are essentially relational, the difference being merely in the relata. We will see below that these issues are relevant with regard to the Japanese inventory of tenses.

The aspectual phenomena Comrie was concerned with form a heterogeneous class, subsuming two distinct classes that are often labeled *viewpoint aspect* on the one hand, and *situation aspect* or *aktionsart* on the other. Smith (1997) spelled out this distinction as in (2).

- (2) a. Aspectual viewpoints present situations with a particular perspective or focus, rather like the focus of a camera lens. Viewpoint gives a full or partial view of the situation talked about. (Smith 1997: 2)
- b. The situation type of a sentence indirectly classifies the event or state talked about according to its temporal properties. (Smith 1997: 3)

In English, according to Smith, the major viewpoint aspects are *Perfective* and *Imperfective*.<sup>2</sup> Briefly put, in the Perfective the event in question is presented “in its entirety,” including its endpoint (if any), whereas the defining property of the Imperfective is that only part of the event is presented, crucially not including its endpoint (if any).<sup>3</sup> Within the class of Imperfective viewpoints, Smith draws a further distinction between Progressive (presenting a part of the event that precedes the endpoint) and Resultative (presenting a part of the event that follows a designated change of state). In sum, Smith’s taxonomy of viewpoint aspects for English is as shown in (3).



<sup>2</sup> The terminological usage varies, as witnessed in the difference between this chapter and Jacobsen (this volume). In the sense used here, sentences may be Imperfective either in virtue of their inherent aspectual properties (as in the case of statives), or due to the presence of certain aspectual morphemes (as with the Progressive). S. Kaufmann and Miyachi (2011) similarly subsumed these two cases, though the label they used was (lexical and derived) *statives*. Jacobsen (this volume) reserves the label “Imperfective” for the latter, derived case.

<sup>3</sup> The disclaimer “if any” in these statements is meant to leave room for the special behavior of statives, which have no defined endpoints and therefore do not fit neatly in this distinction. I will say below that they are Imperfective. Smith (1997) maintains that they are Perfectives with special properties. The difference seems to be mostly terminological.

Viewpoint aspect is also important in Japanese, and the taxonomic distinctions along the lines just discussed prove useful for the Japanese case. The Perfective/Imperfective distinction in the present terminology corresponds to that between “perfective” and “durative” aspects in Kudo (this volume). It has a host of consequences for the well-formedness and interpretation of aspectual and temporal morphology. Furthermore, Smith’s subsumption of Progressive and Resultative under Imperfective jibes well with the fact that these two are expressed by the same morpheme, *-tei-*, which I discuss in some detail below.

The best-known classification of situation types for English is Vendler’s (1957) four-way distinction between *states*, *activities*, *achievements* and *accomplishments* (see also Dowty 1979). Japanese linguistics has its own four-way classification going back to Kindaichi (1950, 1976), which will be relevant below (esp. Section 3.1). Different distinctions within this taxonomy turn out to be relevant for different linguistic phenomena. For instance, the stative/non-stative distinction is of paramount importance in Japanese. Facts such as these – that situation types fall into natural classes which have no particular status in a “flat” hierarchy like Vendler’s – have been used to argue for different taxonomies (e.g., Filip’s 1999 arguments for the classification of Bach 1981, 1986).

Viewpoint and situation aspect are not independent: which viewpoints are available for a particular event description depends in part on its situation type. Thus in English, the contribution of the Progressive in (4) differs depending on the properties of the eventuality in question: the reference time of (4a) is *before* Ken’s dying, whereas that of (4b) is *during* Ken’s laughing.

- (4) a. Ken was dying.  
b. Ken was laughing.

Again, Japanese exhibits a similar dependency between situation type and viewpoint aspect, although the details are different. For illustration, notice that the sentences in (5) are in a sense the Japanese analogs of those in (4), each combining an aspectual expression – the gerund in (4), the marker *-tei-* in (5) – with a verb phrase predicating some property of Ken. But while (5b) is a translation of (4b), (5a) differs strikingly from (4a).

- (5) a. *Ken ga sin-dei-ta.*  
Ken- NOM die-*TEI*-PST  
‘Ken was dead.’  
b. *Ken ga warat-tei-ta.*  
Ken- NOM laugh-*TEI*-PST  
‘Ken was laughing.’

The difference in aspectual interpretation between (4a) and (5a) comes about through the interplay between the meaning of the aspectual morpheme and the way the situation is portrayed in its complement. I will say much more on this intriguing contrast in Section 3.2 below.

## 1.2 A broadly Reichenbachian approach

I adopt a variant of the basic Reichenbachian framework to lay out the key empirical facts that formal analyses of the Japanese temporal system aim to capture. In this subsection I give the basic ideas with just a few simple English examples. The discussion of Japanese below is more detailed.

Reichenbach (1947) characterized various English temporal forms in terms of constraints on the relationships between three temporal parameters, which he dubbed *S*, *R*, and *E* for “speech time,” “reference time,” and “event time,” respectively. He treated the forms he was interested in – Past, Present Perfect, Past Perfect, etc. – as unanalyzed wholes, disregarding their morphological complexity and mapping them directly onto ternary relations between times. Thus for instance, the sentences in (6) were analyzed in terms of the expressions on the right. In this notation, ‘ $\alpha - \beta$ ’ and ‘ $\alpha\beta$ ’ express anteriority and coterminality of  $\alpha$  and  $\beta$ , respectively. Thus (6a) states that  $E = R$  and  $R < S$ , whereas (6c) requires that  $E < R$  and  $R < S$ .

- |        |                       |             |
|--------|-----------------------|-------------|
| (6) a. | <i>Bill left.</i>     | $ER - S$    |
| b.     | <i>Bill has left.</i> | $E - RS$    |
| c.     | <i>Bill had left.</i> | $E - R - S$ |

This system has a number of shortcomings which were repaired in subsequent research. One concerns the transparency of the grammatical forms involved and, by extension, the compositionality of the semantic interpretation. In (6) there is a clear correlation between parts of the forms on the left and parts of the patterns on the right: Past corresponds to  $R - S$  and Perfect to  $E - R$ . But this fine-grained correspondence is obscured by the holistic association of ternary relations with whole temporal complexes. Motivated by observations of this sort, subsequent authors in Reichenbach’s tradition split each of his ternary relations into the conjunction of two binary ones, one holding between *S* and *R* and the other holding between *R* and *E* (see Verkuyt 2012 for discussion). Where no specification is overtly expressed, as between *E* and *R* in the simple Past, equality is the default. Thus each of the sentences in (6) can be analyzed as shown in (7); here, the temporal forms in effect translate into the conjunction of the two constraints given on the right.

- |        |                       |         |         |
|--------|-----------------------|---------|---------|
| (7) a. | <i>Bill left.</i>     | $R < S$ | $E = R$ |
| b.     | <i>Bill has left.</i> | $R = S$ | $E < R$ |
| c.     | <i>Bill had left.</i> | $R < S$ | $E < R$ |

This split into a conjunction of two binary constraints is related to the division of labor mentioned above: tense locates the reference time relative to the speech time, whereas aspect determines which part of the situation is being highlighted. This suggests a fairly straightforward theoretical interpretation of the observations in (7): tense and aspect each correspond to one of the two columns on the right.

The resulting picture is still too simple, though. Specifically, there are two glaring omissions: For one thing, the system does not allow for *relative* interpretations of tense – that is, interpretations relative to a time other than the speech time  $S$ . Secondly, it does not give us a handle on the distinction between Perfective and Imperfective viewpoint aspects.

I will discuss the issue of relative tense below in the section on Japanese (embedded) tenses, where its relevance is most clearly observed. Here I focus on the issue of the Perfective/Imperfective distinction, which can be illustrated with the English Progressive (be V-ing). Consider the sentences in (8).

- |        |                         |         |               |
|--------|-------------------------|---------|---------------|
| (8) a. | <i>Bill ate.</i>        | $R < S$ | $E \subset R$ |
| b.     | <i>Bill was eating.</i> | $R < S$ | $R \subset E$ |
| c.     | <i>Bill had eaten.</i>  | $R < S$ | $E < R$       |

A simplistic paraphrase of (8b) – one which ignores the modal dimension of its meaning as well as some temporal subtleties in more complex cases – would be that Bill's eating was going on during the reference time. To spell this out formally, we need to assume that one of the relations between  $E$  and  $R$  that can be expressed by aspectual morphology, aside from precedence, is *inclusion*. The usual way to ensure this is by assuming that the relata (i.e., the domain of reference of  $E$  and  $R$ ) are temporal intervals, rather than just instants. If we make this assumption, we can extend the language of our theory to include the expressions in (8). While all three sentences feature Past tense, the differences between them are captured on the aspectual side as shown on the right.<sup>4</sup>

With these preliminaries in place, I now turn to the Japanese data and their analysis. By way of preview, I should note that while a broadly Reichenbachian perspective

<sup>4</sup> The idea of modeling the Perfective/Imperfective distinction in terms of the inclusion relation between overlapping  $R$  and  $E$  was proposed by Kratzer (1998), inspired in part by Klein (1994). Klein associates the Perfective with a less specific relation 'AT' which can be instantiated as partial overlap rather than inclusion. I gloss over this for simplicity.



is useful in getting started on an analysis of Japanese, it will turn into something of a straight-jacket as we extend the coverage to increasingly complex data. Specifically, the idea of a strict separation between the contributions of tenses and aspectual morphemes – each imposing constraints on distinct relata, the former on *S* and *R* and the latter on *R* and *E* – turns out to be untenable.

There are two principal ways in which I will deviate from the simple picture. First, we will see below that the location of the reference time is co-determined by tense and viewpoint aspect, each contributing its own constraints. Second, the time relative to which these elements locate the event time differs depending on the context in which the clause finds itself: in matrix clauses it is the speech time, whereas in embedded clauses it is the reference time of the embedding context. All of this motivates an account which moves beyond the Reichenbachian *SRE* taxonomy to a more flexible framework.

## 2 Tense and viewpoint aspect

I start with patterns that are manifest in relatively simple sentences, which will allow us to get an overview of the basic facts before turning to some more complex expressions.

### 2.1 Sentence radicals

In the literature on temporal/aspectual semantics, it is common and useful to take the *sentence radical* as the basic unit of the composition. This notion goes back to Stenius (1967); there, inspired by the concept of a radical in chemistry, it was used to identify the “content-bearing” kernel of the sentence and set it aside from the modal and other elements that operate on it. For our purposes, we can think of sentence radicals as saturated verb phrases, with all required arguments but without temporally significant morphology; the latter includes tenses and aspectual operators, but also other expressions with aspectual import, such as negation.

Sentence radicals bring to the semantic interpretation certain kinds of aspectual information, most of which will enter our discussion only later. One part of this information is important right away, however: the distinction between what I will call here *stative* and *non-stative* radicals, illustrated in (9) and (10).

- (9) *Ken ga nihon ni i-* *Stative*  
 Ken NOM Japan LOC be  
 ‘Ken be in Japan’



- b. *Ken wa Amerika ni {i-ru /i-ta}*  
 Ken TOP America LOC be-NPST be-PST  
 ‘Ken {is / was} in America.’
- c. *Ken wa sensee {da /dat-ta}*  
 Ken TOP teacher COP.NPST COP-PST  
 ‘Ken {is / was} a teacher.’
- (13) a. *Ai wa {isogasi-i /isogasi-katta}*  
 Ai TOP be.busy-NPST be.busy-PST  
 ‘Ai {is / was} busy.’
- b. *Ai wa {ko-na-i /ko-na-katta}*  
 Ai TOP come-NEG-NPST come-NEG-PST  
 ‘Ai { is not coming / did not come }.’

**Table 1:** Japanese tense paradigms

|                   |                    | <i>Examples</i> |              | <i>gloss</i> | <i>Viewpoint</i>    |
|-------------------|--------------------|-----------------|--------------|--------------|---------------------|
|                   |                    | <i>Nonpast</i>  | <i>Past</i>  |              |                     |
| <i>verbal</i>     | <i>non-stative</i> | ik-u            | it-ta        | ‘go’         | <i>Perfective</i>   |
|                   | <i>stative</i>     | i-ru            | i-ta         | ‘be’         | <i>Imperfective</i> |
|                   | <i>copula</i>      | da              | dat-ta       | COP          |                     |
| <i>adjectival</i> | <i>negation</i>    | ika-na-i        | ika-na-katta | ‘go-NEG’     |                     |
|                   | <i>adjectives</i>  | taka-i          | taka-katta   | ‘be high’    |                     |

The interpretation of tenses in simple matrix clauses is sensitive to the distinction between non-statives on the one hand (corresponding to the first row in Table 1) and everything else, on the other. As noted above, non-statives give rise to Perfective clauses unless an aspectual operator intervenes to produce a derived Imperfective. Negation is such an operator, hence the position of *ikanai/ikanakatta* ‘do not go/ did not go’ in the table. (Recall that the verbal suffix expressing negation belongs to the adjectival inflectional paradigm, hence its classification as an adjectival form.) Although I do not discuss in detail any forms derived with aspectual operators in this section, I use the terms “Perfective” and “Imperfective” in the table, since the patterns are the same with the more complex forms.

**Table 2:** Temporal interpretations of matrix clauses (12a, b)

| <i>Ken wa</i><br>Ken TOP | { <i>kyonen</i><br>last year | / <i>ima</i><br>now        | / <i>rainen</i><br>next year | } <i>Amerika ni ...</i><br>America LOC               |
|--------------------------|------------------------------|----------------------------|------------------------------|------------------------------------------------------|
| <i>Perfective</i>        | *<br>$r < s$                 | $s < r$<br>$r < s$         | $s < r$<br>*                 | <i>ik-u</i><br><i>it-ta</i><br>'go-NPST'<br>'go-PST' |
| <i>Imperfective</i>      | *<br>$r < s$                 | $s \subseteq r$<br>$r < s$ | $s < r$<br>*                 | <i>i-ru</i><br><i>i-ta</i><br>'be-NPST'<br>'be-PST'  |

The pattern of available readings for matrix tenses is shown in Table 2. Each cell in the middle columns contains a formal statement about the relationship between two temporal intervals, labeled  $s$  and  $r$ , corresponding to the Reichenbachian speech time and reference time, respectively. We will see below that similar patterns hold in embedded clauses, but that in that case the constraints are imposed on intervals other than the speech and reference time.

The table omits the Reichenbachian event time; I will say more on that later in this subsection. By way of preview, and to give the reader an idea of what the sentences in Table 2 mean, I will say that in the case of Perfectives (upper row), an event of Ken's going to America must occur (in its entirety) during the reference time  $r$ , whereas for Imperfectives (lower row), the state of Ken's being in America must hold throughout  $r$  (and may also extend beyond  $r$  in either direction).

As shown in Table 2, the difference between Perfective and Imperfective sentences is that with Nonpast tense, Perfectives cannot have a purely co-temporal interpretation (one according to which the speech time and reference times overlap), whereas Imperfectives can be so interpreted. This can be shown by inserting the temporal adverb *ima* 'now', which generally brings the reference time as close to the speech time as the temporal semantics of the sentence permits. With the past and future adverbs *kyonen* 'last year' and *rainen* 'next year', the pattern is as expected. (Note, incidentally, that Nonpast is compatible with future reference with both Perfectives and Imperfectives. This will be relevant in the discussion of embedded tenses below.)

From a formal semantic point of view, these facts have implications for the analysis, in particular the division of labor between the tenses and their clausal complements in driving and constraining the temporal interpretation. For instance, it is clear from the data that what I call Nonpast should be interpreted as such, ruling out neither a cotemporal interpretation ( $s \subseteq r$ ) nor a futurate one ( $s < r$ ); the fact that only the latter is available with Perfectives seems to be a consequence of their Perfective aspect, rather than their tense.<sup>7</sup> In general, we see that in matrix contexts the Perfect-

<sup>7</sup> These data also mirror the English ones, although in English things are complicated by the fact that the bare Present with future reference gives rise to a special connotation that has been referred to as the "scheduling" reading (Zandvoort 1965; Lakoff 1971; Dowty 1979; Comrie 1985; S. Kaufmann 2005, among others).

tive/Imperfective distinction has exactly one significant consequence: with Perfectives *s* and *r* cannot overlap, whereas with Imperfectives they can. This is shown by the availability of a cotemporal reading with *ima* ‘now’ for Imperfectives but not for Perfectives.

**Table 3:** Tense and aspect in the interpretation of matrix clauses

|              |                | Nonpast<br>$s \leq r$ | Past<br>$r < s$ |
|--------------|----------------|-----------------------|-----------------|
| Perfective   | $s \not\cap r$ | $s < r$               | $r < s$         |
| Imperfective | $\cdot$        | $s \leq r$            | $r < s$         |

Separating out the respective contributions of tense and aspect that lead to the patterns in Table 2, S. Kaufmann and Miyachi (2011) arrive at the schema in Table 3. Nonpast and Past contribute the constraints shown in the top row ( $s \leq r$  and  $r < s$ , respectively), whereas a separate constraint specifically associated with Perfectives is that *s* and *r* must not overlap (the symbol ‘ $\not\cap$ ’ signifies non-overlap). These constraints are imposed cumulatively in the compositional semantics, so that the four types of matrix clauses discussed so far receive the interpretations shown in the cells of the table.

There is an open question here as to where the Perfective/Imperfective distinction should be encoded. Perfectives impose the constraint that the two intervals are disjoint; but where exactly does this constraint come from? Thus far in this chapter the division between Perfective and Imperfective aspect has been aligned with that between non-stative and stative clauses, respectively. One way to proceed, then, is to encode the Perfective disjointness constraint in the lexical semantics of all non-stative verbs (and ensure that it projects to the clauses containing them, unless blocked by other elements). Ultimately it may be possible – and it would certainly be desirable – to derive the condition from more fundamental properties of the denotations of these clauses.<sup>8</sup> S. Kaufmann and Miyachi (2011) leave this avenue open without pursuing it. As mentioned above, they assume that non-statives denote properties of events, whereas statives denote properties of intervals. They then postulate a silent aspectual operator ‘ASP’ which is sensitive to the denotation of its complement: it

<sup>8</sup> There are attempts to derive the constraint against present reference with Present-tense non-statives from semantic constraints. For instance, Kamp and Reyle (1993) postulate two contravening principles of interpretation: the Present requires that the event time include the speech time, while at the same time the speech time must include the event time. A similar idea is that the utterance time is too short to accommodate the runtime of the event (e.g., Todorovic 2015 and references therein). Habituals involve additional structure, such as generic quantification over events. See also Jacobsen (this volume) for the “marked” interpretations under which Present non-statives are well-formed.

imposes disjointness if the complement denotes a property of events, and does not impose it if the complement denotes a property of intervals. While stipulative, this approach at least clearly identifies the place where a more explanatory account may locate the difference: event-denoting clauses do not allow for overlap between speech time and the reference time (which, as mentioned, includes the runtime of the event).

The operator ASP also regulates the relationship between the reference time and the event time, again drawing on the ontological distinction between intervals and events. I use the term “event time” here in a general sense, encompassing both the events of which non-statives are predicated and the states denoted by statives. In the formal models employed in the semantics of tense and aspect, events are typically understood as essentially non-temporal entities, but with clearly identifiable temporal properties (e.g., start time, duration). These temporal properties are given by a *temporal trace* function mapping each event to the temporal interval that is its runtime.<sup>9</sup> It is indirectly, through their temporal traces, that temporal properties and relations between events (such as precedence, inclusion, etc.) are represented. Now, as I mentioned earlier, I assume that non-stative sentence radicals denote properties of events. The truth-conditional contribution of such a radical to the interpretation of the sentences that contain it is the condition that the event time be the temporal trace of an event of which the radical is true. Accordingly, in the truth conditions below, the role of statements to the effect that some interval  $j$  must contain the temporal trace of an event of a certain kind is to impose two constraints at once: one on the relation between the reference time and the event time ( $j$  and the temporal trace, respectively) and one on the event time (that an event of the right kind must occur at that time). For the time being, we can assume that the temporal trace function maps events to simple intervals; further applications below will call for an approach that assumes more structure.

Note also that the denotations of sentences with stative radicals do not involve events or temporal traces at all, since I assume that statives are predicated of intervals directly. In this case, the statement that a sentence radical holds of an interval  $j$  equates the reference time  $j$  with the event time. Under standard assumptions about statives,<sup>10</sup> this allows for the case that the reference time is properly included in the event time.

(14) shows the meaning of ASP and its dependence on the denotation of the embedded radical *Rad*. Its semantic import is given as a constraint on the relationship between two intervals which are given in general terms as  $\langle i, j \rangle$ . In matrix clauses,

<sup>9</sup> In the literature the temporal trace function is often referred to as ‘ $\tau$ ’; thus for instance, the statement ‘ $\tau(e) \subseteq j$ ’ asserts that the runtime of event  $e$  is included in the interval  $j$ .

<sup>10</sup> Specifically, the assumption here is that they are homogeneous, in the sense that whenever they hold of an interval, they also hold of its subintervals. See Krifka (1989); Landman and Rothstein (2012) for details and discussion.

they correspond to *s* and *r*, respectively. The generic form in (14) is intended to highlight the fact that this operator ASP also occurs in embedded contexts. However, one minor change will be needed to include this case, therefore the definition in (14) is flagged as “preliminary.”

- (14) **Aspectual operator ASP (preliminary).**  
 [Rad ASP] is true of  $\langle i, j \rangle$  if and only if:
- a. Rad is true of *j*, if Rad denotes a property of intervals [stative]
  - b.  $i \not\subseteq j$  and *j* contains the temporal trace of a Rad-event, if [non-stative]  
 Rad denotes a property of events

The interpretation of the tenses is likewise given here in terms of constraints on a binary relation between arbitrary intervals  $\langle i, j \rangle$ . In matrix clauses these correspond to  $\langle s, r \rangle$ . In (15), the variable  $\phi$  ranges over binary relations between intervals.

- (15) **Tenses.**
- a. [ $\phi$  npst] is true of  $\langle i, j \rangle$  if and only if  $\phi$  is true of  $\langle i, j \rangle$  and  $i \leq j$
  - b. [ $\phi$  past] is true of  $\langle i, j \rangle$  if and only if  $\phi$  is true of  $\langle i, j \rangle$  and  $j < i$

The next two examples show how these denotations jointly drive and constrain the temporal interpretation of simple matrix sentences. Here the two intervals related by tense and ASP are  $\langle s, r \rangle$ , the speech and reference time. The steps in (i) and (ii) show how the above definitions lead to the truth conditions in a step-by-step fashion.<sup>11</sup>

- (16) a. *Ken ga nihon ni i-ta.*  
           Ken NOM Japan LOC be-PST  
           ‘Ken was in Japan’
- b. [[[Ken be in Japan]ASP]PAST] is true of  $\langle s, r \rangle$   
     (i) if and only if [[Ken be in Japan]ASP] is true of  $\langle s, r \rangle$  and  $r < s$   
     (ii) if and only if [Ken be in Japan] is true of  $r$  and  $r < s$

In (17b), the two constraints  $s \not\subseteq r$  (contributed by ASP) and  $s \leq r$  (contributed by NPST) jointly determine that the speech time must properly precede the reference time, thus accounting for the lack of a cotemporal reading for Nonpast non-stative clauses.

<sup>11</sup> The derivations do not explicitly mention the Reichenbachian event time, but it is present implicitly: in (16) in the condition that [Ken be in Japan] must be true of  $r$ , and in (17) in the requirement that  $r$  must include the runtime of an event of Ken’s going to Japan.

- (17) a. *Ken ga nihon ni ik-u.*  
 Ken NOM Japan GOAL go-NPST  
 ‘Ken is going to Japan’
- b. [[[Ken go to Japan]ASP]NPST] is true of  $\langle s, r \rangle$   
 (i) if and only if [[Ken go to Japan]ASP] is true of  $\langle s, r \rangle$  and  $s \leq r$   
 (ii) if and only if  $s \not\subset r$  and  $r$  contains the temporal trace of a [Ken go to Japan]-event and  $s \leq r$

In embedded clauses, the same constraints are imposed, not on  $\langle s, r \rangle$ , but on a different pair of intervals. I turn to embedded contexts next.

**Table 4:** Grammaticality and interpretation of various combinations of viewpoint aspect, tense, and temporal connective in temporal clauses

|                     |      |                | <i>mae</i><br>before | <i>ato</i><br>after | <i>uti</i><br>while | <i>toki<sub>rel</sub></i><br>when |
|---------------------|------|----------------|----------------------|---------------------|---------------------|-----------------------------------|
| <i>Perfective</i>   | npst | <i>kaer-u</i>  | ‘before’             | *                   | *                   | ‘before’                          |
|                     | past | <i>kaet-ta</i> | *                    | ‘after’             | *                   | ‘after’                           |
| <i>Imperfective</i> | npst | <i>i-ru</i>    | *                    | *                   | ‘while’             | ‘when’                            |
|                     | past | <i>i-ta</i>    | *                    | *                   | *                   | *                                 |

## 2.3 Temporal adjunct clauses

### 2.3.1 Relative tense

Temporal adjunct clauses in Japanese typically are headed by a *formal noun* (*keisiki meisi*) which takes a tensed clause as its complement. Outwardly they behave like noun phrases. A typical example is given in (18). Here *toki* ‘when’ is the embedding temporal connective. The bracketed material is the whole temporal clause (presumably containing an empty subject controlled by the topic – I omit this as it is not relevant to the temporal interpretation). I should note that the readings of interest here are “episodic” ones in which a single hand-washing is at issue. The sentences also have habitual readings, which in fact are more prominent for most speakers. However, habitual readings are taken to involve additional structure (generic quantification over situations or events) which complicates the picture and does not bear directly on the interpretation of the tenses.

- (18) a. *Ai wa [tabe-ru toki (ni)] te o ara-u.*  
 Ai TOP eat-NPST when (TMP) hand ACC wash-NPST  
 ‘Before Ai eats, she will wash her hands.’



- b. *Ai wa [tabe-ru toki (ni)] te o arat-ta.*  
 Ai TOP eat-NPST when (TMP) hand ACC wash-PST  
 ‘Before Ai ate, she washed her hands.’
- c. *Ai wa [tabe-ta toki (ni)] te o ara-u.*  
 Ai TOP eat-PST when (TMP) hand ACC wash-NPST  
 ‘After Ai eats, she will wash her hands.’
- d. *Ai wa [tabe-ta toki (-ni)] te o arat-ta.*  
 Ai TOP eat-PST when (TMP) hand ACC wash-PST  
 ‘After Ai ate, she washed her hands.’

Two things are worth pointing out about (18): First, the location of the entire sequence of events expressed by the sentence as a whole – i.e., the hand-washing and the eating – relative to the speech time is expressed on the matrix clause. The tense in the embedded clause does not impose any constraints on the location of these events relative to the speech time. Secondly, the tense in the embedded clause does impose a constraint on the temporal location of the two eventualities relative to each other, as the English glosses with ‘before’ and ‘after’ show: the hand-washing must precede the eating in the Nonpast and follow it in the Past (regardless of where they are located relative to the speech time).<sup>12</sup>

These facts suggest that the embedded tense imposes a constraint on the relation between two intervals, as in matrix clauses; however, now these two intervals are not  $\langle s, r \rangle$ , the speech time and (matrix) reference time. Rather, here the two relevant times are the reference time of the matrix clause and that of the embedded clause. I will refer to the latter as  $r_e$ .

An inspection of a wider range of combinations between embedding connectives (besides *toki*) and embedded tenses shows how the temporal interpretation is driven by the interaction between the two. The examples in (19) with an embedded non-stative and in (20) with an embedded stative show some of the relevant data. Depending on the aspectual class of the embedded clause, certain combinations of embedded tenses and embedding connectives are ruled out (these are marked with asterisks on the embedding connectives), while the well-formed combinations may have a narrowed range of interpretive possibilities (these are indicated with the English glosses). Each example is wellformed with two connectives, but given just one English translation. This is due to the fact that in terms of the temporal relations allowed, the two connectives in each case coincide (e.g., with Nonpast non-statives both *toki* and *mae* can be translated as “before”; similarly for the other examples).

<sup>12</sup> This aspect of the meaning is lost if the sentence is translated with English *when*, which is more flexible in terms of the temporal relations it allows.

- (19) a. *ie ni kaer-u {toki /mae /\*ato /\*uti}*  
 home GOAL go.home-NPST when before after while  
 ‘before I {go / went} home’
- b. *ie ni kaet-ta {toki /\*mae /ato /\*uti}*  
 home GOAL go.home-PST when before after while  
 ‘after I {go/went} home’
- (20) *ie ni i-ru {toki /\*mae /\*ato /uti}*  
 home LOC be-NPST when before after while  
 ‘while I {am/was} home’

The case of embedded statives is illustrated with only a Nonpast example in (20) because Past-tense statives in embedded contexts, while not generally disallowed, are subject to a different analysis under the present account, to be discussed below. Notice also that, as indicated by the English gloss with *while*, (20) locates the matrix-clause reference time inside that of the embedded clause. In this, embedded statives differ from matrix statives: for recall from Table 2 above, repeated here as (21a), that future reference is possible with Nonpast statives in matrix clauses. The embedded clause in (21b), by contrast, has no reading which could be rendered as ‘before’ in English.

- (21) a. **Matrix:**  
*Ken wa {ima /rainen} Amerika ni i-ru*  $s \leq r$   
 Ken TOP now next.year America LOC be-NPST  
 ‘Ken {is/will be} in America { now / next year }’
- b. **Embedded:**  
*Ken ga Amerika ni i-ru toki*  $r \subseteq r_e$   
 Ken NOM America LOC be-NPST when  
 ‘when Ken {is/was} in America’

The overall patterns are summarized in Table 5. The second and third columns list the respective contributions of aspect and tense, analyzed in such a way as to give these elements a uniform reading between matrix and embedded contexts wherever possible. Indeed, most of these entries correspond to the ones imposed on  $\langle s, r \rangle$  in matrix clauses in Table 3 above. The only exception to this correspondence is the constraint  $r \subseteq r_e$ , which has no parallel in matrix contexts.

**Table 5:** Temporal connectives (top row) and their complements (left column). (Temporal constraints imposed by each are shown in the margins. Cells in the center show the cumulative effect of the three constraints; ‘\*’ marks contradictoriness)

|                   |                       |              | mae<br>‘before’<br>$r < r_e$ | ato<br>‘after’<br>$r_e < r$ | uti<br>‘while’<br>$r \subseteq r_e$ | toki <sub>rel</sub><br>‘when’<br>· |
|-------------------|-----------------------|--------------|------------------------------|-----------------------------|-------------------------------------|------------------------------------|
|                   | (Aspect)              | (Tense)      |                              |                             |                                     |                                    |
| ik-u              | $r \not\subseteq r_e$ | $r \leq r_e$ | $r < r_e$                    | *                           | *                                   | $r < r_e$                          |
| it-ta             | $r \not\subseteq r_e$ | $r_e < r$    | *                            | $r_e < r$                   | *                                   | $r_e < r$                          |
| i-{ru/*ta}        | $r \subseteq r_e$     | $r \leq r_e$ | *                            | *                           | $r \subseteq r_e$                   | $r \subseteq r_e$                  |
| ika-na-{i/*katta} | $r \subseteq r_e$     | $r \leq r_e$ | *                            | *                           | $r \subseteq r_e$                   | $r \subseteq r_e$                  |

Let us step back and summarize how the patterns in matrix clauses (Table 3) and in embedded contexts (Table 5) can be captured by an analysis which treats the relevant elements in a uniform way. The two constraints which are imposed by a clause’s aspectual/temporal makeup are given in Table 6. Most of them are uniform across matrix and embedded contexts, with the exception of Imperfectives, here indicated by the conditional form of the constraint:  $i \neq s$  holds only in embedded contexts.

**Table 6:** Interpretation of aspect and tense in matrix and embedded clauses

|                   |               |                                      | Matrix              | Embedded              |
|-------------------|---------------|--------------------------------------|---------------------|-----------------------|
| Viewpoint aspect: | Perfective:   | $i \not\subseteq j$                  | $s \not\subseteq r$ | $r \not\subseteq r_e$ |
|                   | Imperfective: | $i \neq s \rightarrow i \subseteq j$ |                     | $r \subseteq r_e$     |
| Tense:            | Nonpast:      | $i \leq j$                           | $s \leq r$          | $r \leq r_e$          |
|                   | Past:         | $j < i$                              | $r < s$             | $r_e < r$             |

As before, these constraints are contributed by the silent operator ASP and tense, respectively. The operator ASP is thus redefined as follows.

(22) **Aspectual operator ASP.**

[Rad ASP] is true of  $\langle i, j \rangle$  if and only if:

- a. Rad is true of  $j$  and  $i \subseteq j$  in case  $i \neq s$ , if Rad denotes a property of intervals [stative]
- b.  $i \not\subseteq j$  and  $j$  contains the temporal trace of a Rad-event, if Rad denotes a property of events [non-stative]

The tenses are interpreted as in (15) above. To this, we can now add entries for the four temporal connectives discussed in this subsection. The basic idea is that temporal clauses add constraints to pairs  $\langle s, r \rangle$ , in addition to the constraints already contrib-

uted by the tense and aspect of the matrix clause. In the cases discussed so far, the constraints are entirely about  $r$ , specifically about the location of  $r$  relative to the eventuality referred to in the temporal clause. For instance, (21b) above is true of  $\langle s, r \rangle$  just in case  $r$  is located within an interval during which Ken is in America.

(23) **Temporal connectives.**

- a.  $[\phi \text{ toki}]$  is true of  $\langle i, j \rangle$  if and only if for some  $k$ ,  $\phi$  is true of  $\langle j, k \rangle$ .
- b.  $[\phi \text{ mae}]$  is true of  $\langle i, j \rangle$  if and only if for some  $k$  such that  $j < k$ ,  $\phi$  is true of  $\langle j, k \rangle$ .
- c.  $[\phi \text{ ato}]$  is true of  $\langle i, j \rangle$  if and only if for some  $k$  such that  $k < j$ ,  $\phi$  is true of  $\langle j, k \rangle$ .
- d.  $[\phi \text{ uti}]$  is true of  $\langle i, j \rangle$  if and only if for some  $k$  such that  $j \subseteq k$ ,  $\phi$  is true of  $\langle j, k \rangle$ .

The following two examples give a detailed illustration of the workings of these definitions.

- (24) *Ie ni i-ru toki ni terebi o mi-ta.*  
 home LOC be-NPST when TMP TV ACC watch-PST  
 ‘When I was at home, I watched TV.’  
 (24) is true of  $\langle s, r \rangle$  if and only if  
 [[[I be home]ASP]NPST]toki] is true of  $\langle s, r \rangle$  and  
 [[[I watch TV]ASP]PAST] is true of  $\langle s, r \rangle$
- a. [[[I be home]ASP]NPST]toki] is true of  $\langle s, r \rangle$ 
    - (i) if and only if for some  $r_e$ , [[[I be home]ASP]NPST] is true of  $[\text{toki}]$   $\langle r, r_e \rangle$ ,
    - (ii) if and only if for some  $r_e$ ,  $r \leq r_e$  and [[I be home]ASP] is true of [NPST]  $\langle r, r_e \rangle$ ,
    - (iii) if and only if for some  $r_e$ ,  $r \leq r_e$  and  $r \neq s \rightarrow r \subseteq r_e$  and I am home [ASP] during  $r_e$ ,
    - (iv) if and only if for some  $r_e$ ,  $r \subseteq r_e$  and I am home during  $r_e$  [Logic]
  - b. [[[I watch TV]ASP]PAST] is true of  $\langle s, r \rangle$ 
    - (i) if and only if  $r < s$  and [[I watch TV]ASP] is true of  $\langle s, r \rangle$ , [PAST]
    - (ii) if and only if  $r < s$  and  $s \not\subseteq r$  and  $r$  contains the temporal trace [ASP] of an event of me watching TV
    - (iii) if and only if  $r < s$  and  $r$  contains the temporal trace of an [Logic] event of me watching TV
- (24) is true of  $\langle s, r \rangle$  if and only if  $r < s$  and  $r$  contains the temporal trace of an event of me watching TV and for some  $r_e$ ,  $r \subseteq r_e$  and I am home during  $r_e$ .

- (25) *Kaet-ta ato de yuusyoku o tabe-ru.*  
 go.home-PST after TMP dinner ACC eat-NPST  
 ‘After I go home, I will eat dinner’  
 (25) is true at  $\langle s, r \rangle$  if and only if  
 [[[I come home]ASP]PAST]ato] is true of  $\langle s, r \rangle$  and  
 [[[I eat dinner]ASP]NPST] is true of  $\langle s, r \rangle$
- a. [[[I come home]ASP]PAST]ato] is true of  $\langle s, r \rangle$   
 (i) if and only if for some  $r_e$ ,  $r_e < r$  and [[[I come home]ASP]PAST] [ato]  
 is true of  $\langle r, r_e \rangle$ ,  
 (ii) if and only if for some  $r_e$ ,  $r_e < r$  and [[I come home]ASP] is true [PAST]  
 of  $\langle r, r_e \rangle$ ,  
 (iii) if and only if for some  $r_e$ ,  $r_e < r$  and  $r \not\supseteq r_e$  and  $r_e$  contains the [ASP]  
 temporal trace of an event of me coming home,  
 (iv) if and only if for some  $r_e$ ,  $r_e < r$  and  $r_e$  contains the temporal [Logic]  
 trace of an event of me coming home
- b. [[[I eat dinner]ASP]NPST] is true of  $\langle s, r \rangle$   
 (i) if and only if  $s \leq r$  and [[I eat dinner]ASP] is true of  $\langle s, r \rangle$ , [NPST]  
 (ii) if and only if  $s \leq r$  and  $s \not\supseteq r$  and  $r$  contains the temporal trace [ASP]  
 of an event of me eating dinner  
 (iii) if and only if  $s < r$  and  $r$  contains the temporal trace of an [Logic]  
 event of me eating dinner
- (25) is true of  $\langle s, r \rangle$  if and only if  $s < r$  and  $r$  contains the temporal  
 trace of an event of me eating dinner and for some  $r_e$ ,  $r_e < r$  and  $r_e$   
 contains the temporal trace of an event of me coming home.

### 2.3.2 Absolute tense

The above discussion gave an overview of many of the widely discussed facts about Japanese embedded tenses. For ease of exposition, I left out one major phenomenon which, however, does merit discussion. This is the possibility of *absolute tense* with some embedding connectives. A tense is absolute if it is interpreted from the perspective of the speech time. Thus for instance, Nonpast tense with past reference as in (24) and Past tense with future reference as in (25) were interpreted relatively, not absolutely. This seemed to be the rule in the preceding subsection.

However, with some connectives an absolute interpretation for the embedded tense is possible. A case in point is *toki*. Recall from the earlier discussion and (19) that when combined with Past-tense non-stative complements, *toki* comes to mean *after*. But this seems to be contradicted by (26).

- (26) *Kyonen nihon ni it-ta toki ni, {maemotte/  
 last.year Japan GOAL go-PST when TMP ahead.of.time  
 tuite-kara} gaidobukku o kat-ta.  
 after.arriving guidebook ACC buy-PST  
 ‘When (I) went to Japan last year, (I) bought a guidebook {ahead of time /  
 after arriving [there]}.’*

Here the adverbs drive the temporal interpretations: *maemotte* ‘ahead of time’ forces a reading under which the buying preceded the trip to Japan, whereas with *tuite-kara* the trip precedes the buying. The tense in the embedded clause adds no information about this relationship.

A couple of things are worth noting about absolute readings of the tenses. First, not all embedding connectives allow for absolute readings of the embedded tense: for instance, *mae* ‘before’, *ato* ‘after’ and *uti* ‘while’ do not, whereas *toki* ‘when’ and a few others, such as *aida* ‘while’ and *koro* ‘when’ (not discussed in this chapter) do. Thus however one’s analysis accounts for this reading, the connective needs to play some role in making it available. Secondly, the temporal relationship between the clauses under this reading is subject to somewhat different constraints. In (26), for instance, the buying of the guidebook may precede or follow the journey to Japan. This choice is driven by temporal adverbs if present, otherwise by world knowledge, but not by the interplay between the tenses and the connective. In particular, the Past in the embedded clause has no bearing on the relationship between the two events; all it indicates is past reference relative to the speech time.

The case of absolute Nonpast is similar. In (27), the embedded clause has Nonpast tense, but once again the temporal relationship is determined by other factors, such as the temporal adverbs.

- (27) *Rainen nihon ni ik-u toki ni, {maemotte/  
 next.year Japan GOAL go-NPST when TMP ahead.of.time  
 tuite kara} gaidobukku o ka-u.  
 after.arriving guidebook ACC buy-NPST  
 ‘When (I) go to Japan next year, (I) will buy a guidebook after I arrive there.’*

For further details and illustrations, see Kudo (1995); S. Kaufmann and Miyachi (2011). The basic facts about the interpretation of absolute tense are summarized by S. Kaufmann and Miyachi as in (28).

- (28) a. If both the matrix clause and the embedded clause are stative, their temporal reference must coincide.  
 b. If one is stative and the other is non-stative, the reference time of the former must include that of the latter.

- c. If both are non-stative, both must refer to times that are “close” to each other in some vague and context-dependent sense.

In the framework developed above, these facts fall out straightforwardly given two assumptions: (i) absolute tenses are interpreted relative to the speech time; and (ii) *toki* with absolute tense identifies the reference times of the matrix and embedded clause.

- (29) Relative and absolute *toki*
- a.  $[\phi \text{ toki}_{\text{rel}}]$  is true of  $\langle i, j \rangle$  if and only if for some  $k$ ,  $\phi$  is true of  $\langle j, k \rangle$ .  
[repeated from (23a)]
- b.  $[\phi \text{ toki}_{\text{abs}}]$  is true of  $\langle i, j \rangle$  if and only if  $\phi$  is true of  $\langle s, j \rangle$ .

To see this definition at work, consider the derivation in (30).

- (30) *It-ta toki<sub>abs</sub> ni gaidobukku o kat-ta.*  
 go-PST when TMP guidebook ACC buy-PST  
 ‘(I) bought a guidebook when (I) went.’  
 (30) is true at  $\langle s, r \rangle$  if and only if  
 $[[[[I \text{ go}] \text{ASP}] \text{PAST}] \text{toki}_{\text{abs}}]$  is true of  $\langle s, r \rangle$  and  
 $[[[I \text{ buy a guidebook}] \text{ASP}] \text{PAST}]$  is true of  $\langle s, r \rangle$
- a.  $[[[[I \text{ go}] \text{ASP}] \text{PAST}] \text{toki}_{\text{abs}}]$  is true of  $\langle s, r \rangle$   
 (i) if and only if  $[[[I \text{ go}] \text{ASP}] \text{PAST}]$  is true of  $\langle s, r \rangle$  [*toki<sub>abs</sub>*]  
 (ii) if and only if  $r < s$  and  $[[I \text{ go}] \text{ASP}]$  is true of  $\langle s, r \rangle$  [PAST]  
 (iii) if and only if  $r < s$  and  $r \not\subset s$  and  $r$  contains the temporal [ASP]  
 trace of an event of me going  
 (iv) if and only if  $r < s$  and  $r$  contains the temporal trace of an [Logic]  
 event of me going
- b.  $[[[I \text{ buy a guidebook}] \text{ASP}] \text{PAST}]$  is true of  $\langle s, r \rangle$   
 (i) if and only if  $r < s$  and  $[[I \text{ buy a guidebook}] \text{ASP}]$  is true of  $\langle s, r \rangle$  [PAST]  
 (ii) if and only if  $r < s$  and  $r \not\subset s$  and  $r$  contains the temporal [ASP]  
 trace of an event of me buying a guidebook  
 (iii) if and only if  $r < s$  and  $r$  contains the temporal trace of an [Logic]  
 event of me buying a guidebook
- (30) is true of  $\langle s, r \rangle$  if and only if  $r < s$  and  $r$  contains the tempo-  
 ral trace of an event of me going and  $r$  contains the temporal  
 trace of an event of me buying a guidebook.

Thus in order for (30) to be true of  $\langle s, r \rangle$ , two events of the requisite kind must have their temporal traces in the reference time (which in addition must precede the speech time). Nothing is implied about their relative temporal order. This is as it should be, since as we saw above the temporal order is not determined by the tense in this case.

### 2.3.3 Comparisons

Before leaving this section, I will briefly discuss how the analysis sketched here compares with some other proposals. The idea that Japanese tenses are essentially *relational* – meaning here that they are predicated of pairs of times – was discussed early in the Japanese literature (Ōta 1973; Soga 1983; Matsumoto 1985) and introduced into the formal semantic literature by Ogihara (1989, 1996). Some aspects of the present account derive from that tradition and from Ogihara’s implementation in particular. For instance, the fact that *mae* ‘before’ and *ato* ‘after’ can only occur with Nonpast and Past complements, respectively, follows from the interaction between the temporal constraints imposed by the embedded tense and the embedding connective. Other aspects are not discussed by Ogihara, such as the restrictions placed by embedding connectives on the aspectual properties (esp. Imperfective/Perfective) of their complements.

#### Tenses under *before*

Clauses embedded under *mae* ‘before’ were used by Sharvit (2014) as the basis for a number of typological comparisons and generalizations. Specifically, Sharvit focused on *before*-clauses in English and their closest analogues in Japanese and Polish. As this chapter is not the place for a detailed review of her comparisons and conclusions, I will merely mention some aspects of her observations and claims about Japanese vis-à-vis English.

Half of Sharvit’s argument centers around the observation that clauses embedded under *mae* cannot have Past tense. (The other half concerns the complements of verbs of saying – see below.) One of her examples is (31); the point is that even though the clause embedded under *mae* has Nonpast tense, an interpretation according to which the time of the meeting precedes the speech time is available (and in fact perhaps most natural in this case). This is not true of English, as shown in the translation of (31), where Past tense is obligatory in the embedded clause as long as the event in question lies in the past.<sup>13</sup>

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**13** Things are different when the embedded clause refers to a future time. Consider (i) in a situation in which Taro’s meeting with Hanako lies in the future. Then Japanese still requires Nonpast in its *mae*-clause, while English no longer requires Past in its *before*-clause.

- (i) a. *Taroo wa [asita] Hanako ni {a-u / \*at-ta} mae ni*  
       *[kinoo] denwa o si-ta.*  
       b. Taro phoned *[yesterday]* before (he) {meets / \*met} with Hanako  
       *[tomorrow].*

Incidentally, (ib) shows that English Past under *before*, where it occurs (as in the translation of (31)), is not an instance of Sequence of Tense (Ogihara 1996), as one might have thought in view of the Eng-



- (31) *Taro wa Hanako ni {a-u/ \*at-ta} mae ni*  
 Taro TOP Hanako DAT meet-NPST meet-PST before TMP  
*denwa o si-ta.*  
 phone ACC do-PST  
 ‘Taro phoned before (he) {\*meets / met} Hanako.’

We saw above how this observation is handled in the tradition of Ogihara (1989, 1996) and his precursors: both the embedding connective and the embedded tense impose constraints on the relationship between two times (the reference times of the matrix clause and the embedded clause); the constraint imposed by *mae* (that the matrix reference time properly precede the embedded reference time) is only consistent with Nonpast Perfective embedded clauses. (Sharvit does not discuss the limitation to Perfectives, following Ogihara’s earlier work, where it is also not discussed.)

Sharvit does not adopt this analysis. Instead, she postulates a fundamental difference between Past and Nonpast tense in Japanese which, together with the lexical semantics of *before* and assumptions about the nature of time, predicts that only Past is disallowed in (31). The details are rather complex, so I present here only the main ideas. First, Sharvit adopts Beaver and Condoravdi’s (2003, henceforth BC) semantic analysis of English *before*, paraphrased as in (32).

- (32) *q before p* is true if and only if some *q*-time precedes the earliest *p*-time.  
 (Sharvit 2014: 15)

The definite description “the earliest *p*-time” is important here: It triggers an existential presupposition to the effect that there is an earliest *p*-time.<sup>14</sup> Sharvit puts this presupposition to a novel use. She assumes that Japanese *mae* has essentially the same semantics as given in (32). Thus a sentence modified by the temporal clause in (33) locates the runtime of the matrix-clause event prior to the first interval at which the bracketed portion is true.

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lish translation of (31) alone. Sharvit acknowledges that the existence of such “Present-under-Past” sentences with English *before* is problematic for her analysis (Sharvit 2014: 305–306). These considerations do not affect the Japanese data.

**14** In BC’s proposal this presupposition accomplishes three things: (i) it accounts for the fact that *before*-sentences are “asymmetric,” in the sense that *q before p* and *p before q* cannot both be true (if there is a *q*-time preceding the earliest *p*-time, there cannot also be a *p*-time preceding the earliest *q*-time); (ii) it requires there to be a *p*-time to begin with, i. e., *p* must be true (this condition is then modulated by their interpretation rule to the effect that *p* may be false, but if it is false it must be likely); and (iii) it helps predict that the complement of *before* licenses negative polarity items. It is questionable whether the latter point about negative polarity items is applicable in the Japanese case, as Sharvit herself points out (Fn. 8).

- (33) *[Hanako- ni {a-u /\*at-ta}] mae*  
 Hanako DAT meet-NPST meet-PST before  
 ‘before (he) {met/meets} Hanako’

What is the earliest time at which the Past-tense version *Hanako ni at-ta* is true? Sharvit assumes an interpretation for *-ta* in terms of existential quantification, spelled out for the sentence at hand as in (34).

- (34) *[[Hanako ni at-ta] mae]* is true of *r*  
 a. if and only if *r* precedes the earliest time  $r_e$  at which *[Hanako ni at-ta]* is true;  
 b. if and only if *r* precedes the earliest time  $r_e$  such that there is a time  $j < r_e$  at which *[Hanako ni aw-]* is true.

Now let *j* be a time at which *[Hanako ni aw-]* is true; for concreteness, let it be the first such time. Then the interpretation in (34) refers to the earliest time  $r_e$  following *j*. This is where Sharvit brings in the additional assumption that time is *dense*, adopting an earlier proposal by Fox and Hackl (2006).<sup>15</sup> Under this assumption, there can be no earliest time following *j* (since for any time following *j* there is an earlier one also following *j*), so the presupposition triggered by *mae* cannot possibly be satisfied. This is, in a nutshell, Sharvit’s explanation for the ban on Past under *mae* in Japanese.

Thus according to Sharvit it is the existential quantification inherent in the meaning of Past which (jointly with the density of time) implies that (34) cannot be true of any time. To accommodate the fact that Nonpast is allowed under *mae*, Sharvit postulates a rather different meaning for Nonpast, one which does not involve quantification and is basically semantically inert. Further assumptions are required to accommodate the English facts; those are beyond the scope of this chapter.

This brief sketch of Sharvit’s account glosses over many details; but even so, one serious problem is already obvious. While Sharvit does not mention clauses headed by *ato* ‘after’, it is quite unclear what she would say about them. The interpretation that Beaver and Condoravdi gave to English *after* can be paraphrased as in (35), following the format of (32) above.<sup>16</sup>

- (35) *q after p* is true iff some *q*-time follows the earliest *p*-time.

<sup>15</sup> That is, for any two times *x*, *z* such that  $x < z$  there is a time *y* such that  $x < y < z$ .

<sup>16</sup> Part of BC’s intention here was to account for two key differences between *before* and *after*: *after*-sentences are not asymmetric, in that *q after p* and *p after q* can both be true (there can be a *q*-time after the earliest *p*-time and a *p*-time after the earliest *q*-time); and *after*-sentences do not license negative polarity items in the same way as *before*-sentences.

Crucially, this statement also involves the *earliest* operator, just like the one for *before* in (32). Now, if Sharvit were to give Japanese *ato* the same analysis (which is not implausible, given that that is what she did with *mae*), then the fact that Past is required while Nonpast is disallowed in (36) would be utterly mysterious.

- (36) [Hanako ni {\*a-u /at-ta}] ato  
 Hanako DAT meet-NPST meet-PST after  
 ‘after (he) {met / meets} Hanako’

The problem is that Sharvit’s explanation for the above *before*-data makes no reference to the temporal semantics of *before*; rather, it should apply indiscriminately whenever a tensed clause is the complement of the *earliest* operator.

As it stands, Sharvit’s account has nothing to say on this matter. I can see two possible responses open to her, both unattractive. One would be to claim that Japanese *ato* differs from *mae* in that *ato* does not involve the *earliest* operator. But in the context of her theory this would only allow Past under *ato*; the ban on Nonpast under *ato* would still be unaccounted for. More generally, any analysis in terms of the presence or absence of an *earliest* operator in the semantics of the embedding connective turns out to be highly dubious anyway, once we look beyond *mae* and *ato*. For instance, we saw above that *uti* never allows Past tense on its complement; but any account of this fact in terms of an *earliest* operator would seem entirely unmotivated.

The other option to account for the *ato* data would be to claim that different tenses are involved – to say that in this case it is Nonpast that has the quantificational meaning and Past that is inert. However, in addition to still relying on the questionable appeal to the *earliest* operator, this approach would have no advantage over the one taken in this chapter, which places some of the explanatory burden directly on the temporal semantics of the embedding connective.

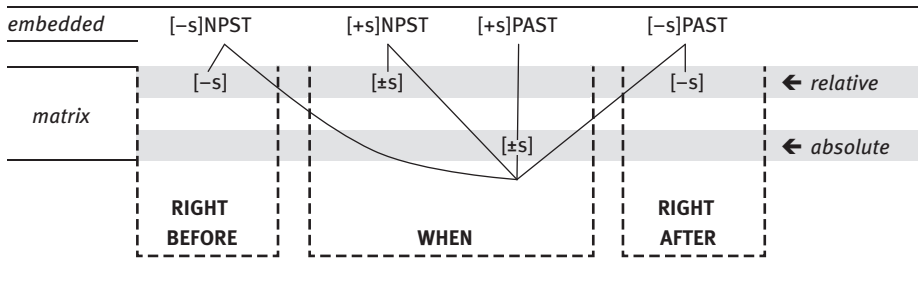
### The ambiguity of *toki*

In the above discussion of absolute tense, I followed S. Kaufmann and Miyachi (2011) in postulating a two-way ambiguity of *toki*. It is worth mentioning in this context that Oshima (2011) proposed an alternative analysis according to which *toki* is *three-way* ambiguous. Oshima dubs the three readings RIGHT-BEFORE, WHEN, and RIGHT-AFTER. These labels indicate the relative temporal location of the event times of the matrix and embedded clause: for instance, on the RIGHT-BEFORE reading the time of the temporal-clause event follows the time of the matrix-clause event.

All three readings come with a variety of constraints and stipulations. To see some of these at work, let me summarize the ways in which a relative reading for the embedded tense can come about. First, RIGHT-BEFORE and RIGHT-AFTER *only* allow for relative interpretations; moreover, both the embedded clause and the matrix clause must be non-stative. A further condition specifies that RIGHT-BEFORE is only compat-

ible with Nonpast and RIGHT-AFTER is only compatible with Past. Turning to WHEN, a relative interpretation for the embedded clause is only available if it is stative; and in this case the relative interpretation only comes about with Nonpast tense. A useful way to think of the relationship between the two approaches is as shown in Figure 1.

Now, the reader will have noticed that the constraints just mentioned define almost exactly the range of uses of S. Kaufmann and Miyachi's relative *toki<sub>rel</sub>*. But only "almost" exactly, because of an important difference: Oshima predicts that no relative interpretation is available when a non-stative *toki*-clause is combined with a stative matrix clause. This is because in that case *toki* can mean neither RIGHT-BEFORE nor RIGHT-AFTER (they require a non-stative matrix clause), and WHEN cannot have the relative interpretation (since the embedded clause is not stative). This prediction is wrong, however: (37) is a well-formed sentence with a non-stative embedded clause and a stative matrix clause; yet the embedded Nonpast has to get a relative interpretation, given the Past in the matrix clause.



**Figure 1:** Interpretations predicted by Oshima (2011), co-determined by (i) aspectual class and tense of the embedded clause (top row) and (ii) aspectual class of the matrix clause (lower rows). '[+s]' = stative; '[-s]' = non-stative.

- (37) *Taro ga ie ni kaer-u toki ni, Hanako wa*  
 Taro NOM home GOAL return-NPST when TMP Hanako TOP  
*mada ofisu ni i-ta.*  
 still office LOC be-PST  
 'When Taro went home, Hanako was still in the office.'

Overall, as far as the predictions about the availability of relative tense are concerned, Oshima's proposal seems to have no advantage over S. Kaufmann and Miyachi's. Turning to absolute tenses, the two theories make essentially the same predictions: if both are stative, the two times coincide; if one is non-stative and the other is stative, the former is included in the latter; and if both are non-stative, both must lie within the same reference interval, but their order relative to each is not fixed by the semantics.

Given that the predictions are rather similar, one might look to other criteria by which to compare the two approaches. Oshima (2011) took some steps in this direction and claimed certain advantages for his approach. However, those claims are hard to evaluate due to the informal nature of his analysis. He does not offer a compositional semantics of the sub-sentential expressions, such as tenses and aspectual morphemes, and their interactions with each other. Consequently, it is unclear whether a formal implementation which actually reflected the claims and observations in his prose could be any simpler than the one from S. Kaufmann and Miyachi's.

For instance, Oshima considers it an advantage that he does not postulate an ASP operator like that of S. Kaufmann and Miyachi (2011). But neither does he offer anything else to do the work that it does. That work, recall, was to ensure that the denotations of the tenses were modulated according to the aspectual class of the radical. It is clear that Oshima considers both aspectual class and tense important in determining the interpretation of *toki*-clauses. But neither is given an identifiable correlate in his analysis.

Similar points can be made about the selectional constraints Oshima postulates for each of the senses of *toki*. No indication is given as to what about statives is such that they cannot be embedded under RIGHT-BEFORE or RIGHT-AFTER, or what about non-statives is such that they cannot have a relative interpretation under WHEN. Indeed, some statements are so vague as to sound contradictory: on the one hand, “tenses within *toki*-clauses are semantically redundant” (Oshima 2011: 22); on the other, “the selection of the embedded tense form may affect the (predominant) interpretation of a *toki*-clause” (Oshima 2011: 26).

It bears mentioning, in any case, that the question of what (if anything) the embedded tense contributes to the interpretation is a pressing one: its answer may help us understand Oshima's decision to distinguish RIGHT-BEFORE and RIGHT-AFTER as two separate readings of *toki*, even though they have almost identical meanings, except for the distinction between precedence and subsequence; and moreover, each selects for a specific tense form which, in a wide range of other embedded and unembedded contexts, marks just that distinction.

## 2.4 Relative clauses and absolute tenses

The structures discussed so far involve tenses embedded in temporal adjunct clauses. I treated items like *mae* ‘before’, *toki* ‘when’ etc. as clause-embedding connectives that behave outwardly like nouns but which, crucially, stand in no relation to a gap inside the embedded clause.

In this section I briefly discuss constructions which require a different analysis. The sentence in (38) exhibits a so-called *Geis ambiguity*, named after Geis (1970), who discussed their English counterparts. The English paraphrases in (38a,b) are intended to make the two readings salient: according to (38a) the speaker waited at the time of

Junko's utterance (or shortly thereafter, depending on whether *toki* has an absolute or relative interpretation; both are possible here), whereas in (38b) the speaker waited at the time of Satoshi's arrival according to Junko.

- (38) *Watasi wa Zyunko ga Satoshi ga tuk-u to*  
 I TOP Junko NOM Satoshi NOM arrive-NPST QUOT  
*it-ta toki ni eki de kare o mat-tei-ta.*  
 say-PST when TMP station LOC he ACC wait-TEI-PST  
 'I waited for Satoshi at the station when Junko said Satoshi would arrive.'
- a. ≈ when Junko spoke (saying he would arrive) [high reading]
- b. ≈ at the time of which Junko said that he would arrive [low reading]  
 (then)

The reading in (38a) is accounted for by the analysis so far: assuming that the structure of the *toki*-clause is as shown in (39a), the reference time of this clause is (or contains) the time of Junko's speaking event. In (38a) this time is located relative to the waiting event reported in the main clause.

- (39) a. [*Zyunko ga [Satoshi ga tuk-u] to it-ta] toki*  
 Junko NOM Satoshi NOM arrive-NPST QUOT say-PST when  
 'after Junko had said that Satoshi would come'
- b. [*Zyunko ga [Satoshi ga t<sub>i</sub> tuk-u] to it-ta] toki<sub>i</sub>*  
 Junko NOM Satoshi NOM arrive-NPST QUOT say-PST when  
 'the time of which Junko had said Satoshi would come'
- c. [*Zyunko ga [t<sub>j</sub>yokuzitu tuk-u] to it-ta] hito<sub>i</sub>*  
 Junko NOM next.day arrive-NPST QUOT say-PST person  
 'the person of whom Junko had said they would come the next day'

For the reading in (38b), this will not do. Intuitively, in this case, Junko's original assertion was not merely that Satoshi would come; rather, Junko said of a certain time that Satoshi would come then, and that time is bound by *toki* and temporally co-located with the waiting event in the main clause. The structure in (39b) is intended to show this in a simplified fashion. Some account is required of how exactly the dependence between *toki* and the empty temporal adverbial position inside the embedded clause (here indicated by the coindexed *t<sub>i</sub>*) comes about. I am not going to go into details; suffice it to say that under this analysis (39b) is a run-of-the-mill relative clause, analogous to (39c), in which the vacated position happens to be the subject *hito* 'person'.

If the structure in (39b) is correct, then the entire *toki*-phrase is a nominal modified by a relative clause, and *toki* is a full noun meaning 'time', rather than a so-called

formal noun (*keisiki meisi*) functioning as a clause-embedding conjunction. It is not implausible to assume that *toki* has these two homophonous variants. For instance, while the temporal postposition *-ni* generally can be dropped with *toki*, the low reading is only available when *-ni* is present (Miyagawa 2012, Oda 2015). Thus (40), which differs from (38) above only in that *toki* lacks the postposition *-ni*, does not have a low reading.

- (40)      *Watasi wa Zyunko ga Satoshi ga tuk-u to*  
           I        TOP Junko    NOM Satoshi NOM arrive-NPST QUOT  
           *it-ta toki, eki de kare o mat-tei-ta.*  
           say-PST when station LOC he    ACC wait-TEI-PST  
           ‘I was waiting for Satoshi at the station when Junko said Satoshi would arrive.’
- a.    ✓ when Junko spoke (saying he would arrive)                      [high reading]
- b.    ✗ at the time of which Junko said that he would arrive [low reading]  
       (then)

It is also relevant in this connection that the noun *zikan* ‘time,’ a (near-)synonym of *toki* which does not have a use as a formal noun, allows for the low reading. Notice also that *-ni* is required in these cases.

- (41)      *Watasi wa Zyunko ga Satoshi ga tuk-u to*  
           I        TOP Junko    NOM Satoshi NOM arrive-NPST QUOT  
           *it-ta zikan \*(ni) eki de kare o mat-tei-ta.*  
           say-PST time    TMP station LOC he    ACC wait-TEI-PAST  
           ‘I was waiting for Satoshi at the station when Junko said Satoshi would arrive.’
- a.    ✓ when Junko spoke (saying he would arrive)                      [high reading]
- b.    ✓ at the time of which Junko said that he would arrive [low reading]  
       (then)

A reasonable hypothesis would be, then, that the clauses which allow for a low reading are just those in which the full noun *toki* is modified by a relative clause. Semantically, [*X toki*] roughly means ‘time at which X’.<sup>17</sup> We may then assume also

<sup>17</sup> An analysis of English *when*-clauses along similar lines was proposed by von Stechow (2009), based on ideas of Irene Heim’s and others. Generally in this tradition the construction is interpreted as a definite description, i.e., ‘the time at which X’. This may be the right analysis for Japanese as well, but the matter is not so clear since definiteness is not overtly marked in Japanese. I leave this question open.

that the denotation of this expression is merely a set of times, not a binary relation between times as was the case with *toki* in temporal adjunct clauses above.

More specifically (but still glossing over various open questions), the interpretation of a sentence like (38) on its low reading would be as shown in (42). The temporal clause in (42a) is interpreted as a property of times, meaning that it is true of *r* just in case Junko said that Satoshi would arrive at *r*. In checking whether this condition is met, the Past tense on *it-ta* ‘say-PST’ is interpreted relative to the the speech time, that is, absolutely. It is for this reason that (42) can be true, even though it requires for its truth that Junko’s utterance happened prior to the speaker’s waiting at the station (due to the Nonpast tense on *tuk-u* ‘arrive’).

- (42)      *Zyunko ga Satoshi ga t<sub>i</sub> tuk-u to it-ta*  
             Junko    NOM Satoshi    NOM    arrive-NPST QUOT say-PST  
             *toki<sub>i</sub> ni eki de kare o mat-tei-ta.*  
             when TMP station LOC he    ACC wait-TEI-PST  
             ‘I was waiting for Satoshi at the station when Junko said Satoshi would arrive.’  
             (42) is true on its low reading at  $\langle s, r \rangle$  if and only if

- a.    [[[[I say [[S *t<sub>i</sub>* arrive]ASP]NPST]]ASP]PAST] *toki<sub>i</sub>*] is true of *r* and
- b.    [[[I wait at the station]ASP]PAST] is true of  $\langle s, r \rangle$

The interpretation shown in (42) is the low reading. But once we avail ourselves of the possibility of an analysis in terms of relative clauses, there would seem to be no reason to limit it to this case. Would it be plausible to assume it for high readings as well, or for sentences without deep embeddings in which the low/high distinction does not arise?

There is some evidence for this. This is not the place for a detailed discussion of this topic, which is the subject of much current research. But here are some suggestive facts.

To address this question in a somewhat roundabout way, I would like to revisit some observations about *mae* ‘before’ from Section 2.3. First, recall the claim that the tense in the complement clause of *mae* ‘before’ does not receive an absolute interpretation, regardless of the temporal reference. This is illustrated in (43).

- (43)      *Zyon wa, nihon ni {ik-u/ \*it-ta} mae ni,*  
             John TOP Japan GOAL go-NPST go-PST before TMP  
             *gaidobukku o kat-ta.*  
             guidebook ACC buy-PST  
             ‘Before John went to Japan, he bought a guidebook.’



However, an absolute interpretation does become available when certain modifiers are inserted between *mae* and its complement clause. Thus Oda (2015); Oda and Tatsumi (2017) observe that temporal adverbs expressing distance, such as *sukosi* ‘shortly’ and *mik-ka* ‘three days’, make Past tense under *mae* felicitous (provided that the clause refers to the past relative to the speech time)<sup>18</sup>:

- (44) a. *Zyon wa, nihon ni it-ta {sukosi/ mik-ka} mae*  
 John TOP Japan GOAL go-PST shortly three.days before  
*ni, gaidobukku o kat-ta.*  
 TMP guidebook ACC buy-PST  
 ‘{Shortly/Three days} before John went to Japan, he bought a guidebook.’
- b. *Zyon wa, nihon ni it-ta sono mae ni,*  
 John- TOP Japan GOAL go-PST that before TMP  
*gaidobukku o kat-ta.*  
 guidebook ACC buy-PST  
 ‘Before John went to Japan, he bought a guidebook.’

Furthermore, such modifiers also open up a Geis ambiguity with *mae*: Sharvit (2014) notes<sup>19</sup> that a low reading is available with sentences like (45). Moreover, Oda and Tatsumi (2017) note that in this case the clause embedded under *mae* can also have Past tense.

- (45) *Mary ga John ga nihon ni kur-u to*  
 Mary NOM John NOM Japan GOAL arrive-NPST QUOT  
*syutyoo- {su-ru/ si-ta} {sukosi/ mik-ka/ sono} mae*  
 claim do-NPST do-PST shortly three.days that before  
*ni, Taroo wa nihon ni tui-ta.*  
 TMP Taro TOP Japan GOAL arrive-PST  
 ‘Taro arrived in Japan {shortly / three days} before Mary claimed that John would arrive in Japan’
- a. three days before Mary spoke [high]
- b. three days before John’s arrival according to Mary [low]

It seems that all of these facts can be accommodated under the following assumptions: First, *toki*-phrases can have a reading on which *toki* is a full noun modified by a relative clause, in which case the whole construction means roughly ‘time at which ...’

<sup>18</sup> Related examples can be found in Takubo (2012).

<sup>19</sup> Sharvit cites Koichi Otaki (p.c.) as her source. These judgments are corroborated by my informants and also confirmed by Oda and Tatsumi (2017).

The postposition *-ni*, which is typically optional after *toki*, is obligatory in this case. Second, *mae* can take such a *toki*-clause as its complement. This is illustrated in (46). In this sentence, *toki* is related to a gap inside the relative clause. Syntactically, we can assume, as is usually done, that this relationship comes about via movement of a covert relative operator.

- (46)     *Mary ga t<sub>i</sub> hanasi-ta toki<sub>i</sub> yori mae ni Taroo ga*  
           Mary    NOM    speak-PST    time    than    before    TMP    Taro    NOM  
           *hanasi-ta.*  
           speak-PST  
           ‘Taro spoke before (the time at which) Mary spoke.’

Finally, in this sentence *toki* can be omitted when certain modifiers intervene between *mae* and the relative clause, giving rise to a structure like (47). That a modifier is required before *mae* in order for this sentence to be well-formed may have to do with a syntactic difference between this kind of nominal *toki*-phrase and the clausal ones discussed in Section 2.3 above.

- (47)     *Mary ga t<sub>i</sub> hanasi-ta OP<sub>i</sub> {sukosi/mik-ka} mae ni*  
           Mary    NOM    speak-PST    shortly    three.days        before    TMP  
           *Taroo ga hanasi-ta.*  
           Taro    NOM    speak-PST  
           ‘Taro spoke before (the time at which) Mary spoke.’

Ultimately, with regard to what was discussed in Section 2.3, this brings us full circle to what I described there as an ambiguity of *toki*, namely the fact that it can have relative and absolute uses. Based on the discussion in this section, we may conjecture that absolute *toki* is just the relative-clause *toki* discussed here. If this is correct, then a sentence like (48) has a relative-clause structure as well. The fact that other connectives like *mae*, *ato* and *uti* do not have a similar use would then be due to the fact that no analogous relative-clause analysis is available for them.

- (48)     *Zyon wa, t<sub>i</sub> nihon ni i-ta toki<sub>i</sub> ni, siawase dat-ta.*  
           John TOP    Japan LOC    be-PST    when    TMP    happy    COP-PST  
           ‘When John was in Japan, he was happy.’

These are intriguing possibilities, but the details remain to be worked out.<sup>20</sup>

<sup>20</sup> See Sharvit (2014); Oda and Tatsumi (2016, 2017) for similar speculations.

### 3 Aktionsart and aspectual operators

As noted above, “aktionsart” and “situation aspect” are used interchangeably in talking about distinctions in aspectual properties which originate from verbs or sentence radicals themselves. The distinction between statives and non-statives already figured above as a lexical division which was grounded in ontology and had consequences for the Imperfective/Perfective distinction at the level of the clause. In this section I discuss two things: aspectual operators which make their own contributions to the Imperfective/Perfective divide, and arguments for a more fine-grained ontology of events.

#### 3.1 Aktionsart

The best-known classification of Japanese aktionsarten (or situation aspects) is due to Kindaichi (1950). It resembles Vendler’s more widely known (1957) four-way classification for English, but the correspondence is not perfect (for details, see Jacobsen 1992; also Ogiwara 1998). Kindaichi billed his proposal as a classification of verbs, but as in English and other languages, elements other than the verb, such as arguments and adverbs, also contribute to the overall aspectual behavior of the clause (see Filip 1999, for overview and discussion). It is therefore more appropriate to think of the classification as applying to entire sentence radicals, especially for the purposes of the present discussion, where the focus is on tense and aspectual morphology and the sub-clausal composition is not at issue.

With this caveat in mind, Kindaichi’s classes, along with some criteria and examples, are given in (49). The primary empirical diagnostic on which the classification is based concerns the combination of the verb (or clause) in question with the aspectual suffix *-tei-*. I return to this morpheme in more detail below.<sup>21</sup> Specifically, the two relevant factors are (i) whether the form in question can or must combine with *-tei-* (statives cannot, duratives and instantaneous ones can, Class IV have to); and (ii) in those cases in which the form with *-tei-* is wellformed, how it is interpreted.

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<sup>21</sup> The interdependence of the analyses of *-tei-* and of aktionsart presents a bit of a conundrum for the organization of a survey chapter like this one. Both can ultimately be grounded in the ontology of eventuality types, as we will see momentarily. But it is a good strategy to start from observable linguistic reflexes, rather than their (putative) extralinguistic causes.

(49) **Kindaichi's aspectual classes**

- a. Stative (*zyootai*): generally do not appear with *-tei*.<sup>22</sup>
- *i-ru* / *ar-u* / *deki-ru*  
‘exist (animate)’ ‘exist (inanimate)’ ‘can’
  - *\*i-tei-ru* / *\*at-tei-ru* / *??deki-tei-ru*<sup>23</sup>
- b. Durative (*keizoku*): can receive a Progressive reading with *-tei*.
- *aruk-u/ ie o tate-ru /mado o ake-ru*  
‘walk’ ‘build a house’ ‘open<sub>tr</sub> a window’
  - *arui-tei-ru/ ie o tate-tei-ru /mado o ake-tei-ru*  
‘be walking’ ‘be building a house’ ‘be opening a window’
- c. Instantaneous (*syunkan*): only have a Resultative reading with *-tei*.
- *sin-u/ ak-u*  
‘die’ ‘open<sub>in</sub>’
  - *sin-dei-ru/ ai-tei-ru*  
‘be dead’ ‘be open’
- d. Class IV (*dai yonsyu*): only occur with *-tei*.<sup>24</sup>
- *??sobie-ru/ ??ni-ru*  
‘tower’ ‘resemble’
  - *sobie-tei-ru/ ni-tei-ru*  
‘tower’ s‘resemble’

The statives in this taxonomy are the verbs that have already been identified in the last section as allowing for co-temporal readings with Nonpast tense. I also noted above that they share this behavior with adjectives. The class of durative verbs includes the analogues of both Vendlerian *activities* and *accomplishments*. What they share in common is an activity or process phase in the eventualities they apply to – this activity phase being all there is in the former case, whereas in the latter it is concluded by a culmination and optionally followed by a designated result state. Class IV verbs have no clear counterpart in English. Ogihara (1998) calls them “quasi-instantaneous” verbs. This accounts for the observation that, like (other) instantaneous verbs,

<sup>22</sup> There are exceptions. For instance, Kindaichi himself, in the course of his discussion of these very facts, uses the form *sude-ni wakatte itadaketeiru* ‘the reader already understands’ (the fact in question), which adds *-tei-ru* to the presumably stative derived potential form *itadake-*. But as the presence of the adverb *sude-ni* ‘already’ indicates, this form can be explained away in terms of coercion to an inchoative reading of the verb.

<sup>23</sup> The verb *dekiru* is multiply ambiguous. At issue here is its ability reading, glossable in English as ‘can’. There are other readings with different aspectual properties which can occur with *-tei-*, such as one that can be roughly glossed as ‘become’ or ‘come into existence’.

<sup>24</sup> This is not quite true: In adnominal position (as relative clauses) they end in *-ta*.

they only have resultative readings with *-tei-*, their distinguishing property being that they cannot occur without *-tei-*. Thus Ogihara argues for a merger of the fourth category as a sub-class of the instantaneous verbs, defined by the absence of the stand-alone use. If we adopt this suggestion, this leaves two classes of non-statives: durative and instantaneous. The distinction between them is characterized in terms of the meaning that results when they combine with *-tei-*. I now discuss this morpheme in some more detail.

### 3.2 *-tei*

The aspectual marker *-tei-* is one of the most widely studied expressions of the Japanese temporal/aspectual inventory.<sup>25</sup> It typically attaches directly to the verbal stem, although certain morphemes may intervene, such as passive *-(r)are* and causative *-(s)ase*. Negation and tense, if present in the same clause, must follow *-tei-*.<sup>26</sup>

Semantically, *-tei-* is interesting because of its wide array of possible interpretations. The list in (50) illustrates the range of readings that have been identified in the literature, along with labels of my own for the purposes of this chapter.

- (50) a. *Taroo ga hasit-tei-ru.* PROG  
           Taro   NOM run-TEI-NPST [progressive]  
           ‘Taro is running.’
- b. *Hanako ga taore-tei-ru.* RES  
           Hanako NOM fall-TEI-NPST [resultative]  
           ‘Hanako is on the ground (after falling).’
- c. *Ziroo ga (mae-ni) hon o kai-tei-ru.* EXP  
           Ziro   NOM previously book ACC write-TEI-NPST [experiential]  
           ‘Jiro has written a book (before).’
- d. *Mitiko ga doa o tatai-tei-iru.* ITER  
           Michiko NOM door ACC knock-TEI-NPST [iterative]  
           ‘Michiko is knocking on the door.’
- e. *Saburoo ga zitsensya de kayot-tei-ru.* HAB  
           Saburo   NOM bicycle INST commute-TEI-NPST [habitual]  
           ‘Saburo is commuting by bicycle.’

<sup>25</sup> Morphologically, *-tei-* consists of the sentence-final particle *-te-* and the light verb stem *-i-*. There is some disagreement as to whether these two constituents combine in a semantically transparent manner or not. I treat *-tei-* as a whole for simplicity.

<sup>26</sup> There may also be no tense in the clause at all, as in *-teinagara*, *-teitara*, imperatives with *-teite*, and the like.

- f. *Tomeko no eigoryoku ga sugure-tei-ru.* STAT  
 Tomeko GEN English.skill NOM superior-TEI-NPST [stative]  
 ‘Tomeko’s English is superior.’
- g. *Zyon ga suwat-tei-ru.* DYNSTAT  
 John NOM sit-TEI-NPST [dynamic stative]  
 ‘John is sitting.’

To my knowledge, no single analysis distinguishes all of these readings. Most consider a smaller set, either conflating some of the above distinctions or neglecting some of the classes. Table 7 lists some of the resulting taxonomies. All the listed categories are recognizable cross-linguistically and have been given treatments in formal semantic accounts of various languages, although typically they are not all expressed by a single morpheme, as they are in Japanese.

**Table 7:** Some taxonomies of readings of *-tei-*. Sources: (a) Fujii (1966); (b) Yoshikawa (1976); (c) Shirai (2000); (d) Ogihara (1998)

| HAB |                   | ITER           | PROG           | DYNSTAT       | RES                     | STAT                    | EXP           |
|-----|-------------------|----------------|----------------|---------------|-------------------------|-------------------------|---------------|
| (a) |                   | <i>hanpuku</i> | <i>shinkoo</i> | <i>zizoku</i> | <i>kekka no sanzou</i>  | <i>tanzyun zyootai</i>  | <i>keiken</i> |
| (b) | <i>kurikaeshi</i> |                | <i>keizoku</i> |               | <i>kekka no zyootai</i> | <i>tan naru zyootai</i> | <i>keiken</i> |
| (c) | habitual          | progressive    |                |               | resultative             |                         | perfect       |
| (d) | progressive       |                |                | perfect       |                         |                         | experiential  |

Formal semantic accounts of Japanese *-tei-* typically use a coarse-grained taxonomy. An example is Ogihara’s in row (d), the one with the widest currency in the anglo-phone linguistic literature on Japanese. Note in this connection that all the rows in Table 7 agree on some broad distinctions. For instance, the line between what Ogihara calls “progressive” and “perfect” is drawn in all rows, likewise the one between his “perfect” and “experiential.” These three supercategories are generally considered the three major readings of *V-tei-* in the formal semantic literature. I call these three major readings of clauses containing *-tei-* *Progressive*, *Resultative*, and *Experiential*.

This does not necessarily mean that these are three distinct readings of *-tei-*. In particular, if the available interpretations for the sentence vary systematically depending on the aspectual properties of the embedded radical, we may find that the variation is fully explained by the interplay of those aspectual properties and just one or two distinct meanings of *-tei-*. So two interdependent questions arise now. First, how many distinct variants of *-tei-* should we postulate in order to account for the

three readings? And second, how do the readings available for a particular verb (or sentence radical) depend on its aspectual properties?

Regarding the first question, one idea with some appeal is to subsume the Perfect and Experiential under one heading, as both intuitively involve some notion of anteriority or resultativity, and to set them apart from the Progressive as a distinct reading. This approach was taken by Kindaichi (1950, 1976), for instance. It is problematic, however: As we will see immediately below, the Experiential reading exhibits a distinctive pattern of co-occurrence with temporal adverbs. Specifically, under the Experiential reading (but under neither of the others), Nonpast tense in the matrix clause is compatible with past adverbials like *kyonen* ‘last year’. This shows that under this reading the reference time is (or can be) distinct from the time at which the sentence radical is interpreted. The unavailability of this option with either of the other two readings shows that there the connection between the reference time and the time of the radical is tighter. Ogihara (1998) attributes this observation to Fujii (1966). It is the principal argument behind an alternative approach which was proposed, with differences in detail, by Ogihara (1998) and Igarashi and Gunji (1998); Gunji (2004). This account lumps the Progressive and Resultative together as one reading, setting them apart from the Experiential.

Regarding the second question, the embedded radical’s aspectual properties clearly play a role in determining the readings available with *-tei-* (along with such other factors as temporal adverbs). For one thing, this means that not all sentences with *-tei-* exhibit all three readings; the only examples which do are accomplishments with an activity phase and a designated result state. An example is (51) from Igarashi and Gunji (1998). (51a,b) show the Progressive and Resultative readings, respectively, brought out by the adverbs *ima* ‘now’ and *kesa kara* ‘from this morning,’ and highlighted by the English glosses. In (51c), the combination of the past adverbial *sannen mae-ni* ‘three years ago’ with Nonpast tense forces the Experiential Perfect reading (Fujii 1966, Ogihara 1998).

- (51) a. *Mari wa ima tonari no heya de kimono*  
 Mari TOP now next GEN room LOC kimono  
*o ki-tei-ru.*  
 ACC put.on-TEI-NPST  
 ‘Mari is now putting on a kimono in the next room’ [Progressive]
- b. *Mari wa kesa kara zutto ano kimono*  
 Mari TOP this.morning from always that kimono  
*o ki-tei-ru.*  
 ACC put.on-TEI-NPST  
 ‘Mari has been wearing that kimono since this morning’ [Resultative]

- c. *Mari wa ano kimono o sannen mae ni*  
 Mari TOP that kimono ACC three.years before TMP  
*ki-tei-ru.*  
 put.on-TEI-NPST [Experiential]  
 (i) ‘Mari has the experience of putting on that kimono three years ago’  
 [Exp. I]  
 (ii) ‘Mari has the experience of wearing that kimono three years ago’  
 [Exp. II]

Igarashi and Gunji (1998) argue that the Experiential (51c) actually has two distinct readings, depending on which of the two phases of the accomplishment – the putting on or the wearing of the kimono – is said to have taken place in the past. The two translations in (51c) are meant to bring out this difference. Gunji (2004) puts even more emphasis on this distinction and extends the tripartite Progressive/Resultative/Experiential taxonomy by treating the two variants of the Experiential as distinct (though related) readings. This allows him to postulate two independent dimensions of variation: what I shall dub an “Activity” vs. “Result” reading of the preajacent, coupled with an “Ongoing” vs. “Anterior” reading of *-tei-*. Table 8 shows how the four readings in (51) come about under this system as the four possible combinations of values for these variables.<sup>27</sup>

**Table 8:** Gunji’s (2004) four readings for *-tei-*. (Japanese labels are his, English glosses are mine)

| <i>-tei-</i> |                          |                              |       |                                     |         |
|--------------|--------------------------|------------------------------|-------|-------------------------------------|---------|
|              |                          | <i>kihon</i><br>Ongoing      |       | <i>zyootai</i><br>Anterior          |         |
| Radical      | <i>kihon</i><br>Activity | <i>sinkoo</i><br>Progressive | (51a) | <i>keiken I</i><br>Experiential I   | (51ci)  |
|              | <i>zyootai</i><br>Result | <i>kekka</i><br>Resultative  | (51b) | <i>keiken II</i><br>Experiential II | (51cii) |

<sup>27</sup> The terminology of (Igarashi and) Gunji is slightly different. Igarashi and Gunji (1998) write in English, Gunji (2004) in Japanese. In either version, both the radical and *-tei-* have two distinct “views” (*siya*): a “basic” view (*kihon siya*) and a “resultative” view (*zyootai siya*), with the former generally picking out an earlier stage of the eventuality in question than the latter. I use alternative terms in hopes to enhance readability, although I see no problem in principle with their choice. Notice also that (Igarashi and) Gunji consider *-tei-* complex. They attribute the Ongoing/Anterior distinction to an ambiguity in the meaning of *-te-* alone (citing Matsumura 1971, for historical evidence), taking *i* to be semantically inert (which for them means that *i* only has a basic view). I ignore this matter here.





A similar flexibility can be observed with other predicates, such as *taore-* ‘fall’. With a punctual temporal adverb, as in (53a), it has an achievement reading referring to a punctual eventuality, as brought out by the English gloss. However, *taore-* is also compatible with durative adverbs like *sanpun* ‘for three minutes’; in that case, on the most natural reading Hanako spent three minutes on the ground, rather than falling down. (Again, the latter reading may be available in contexts in which a “slow-motion” construal is somehow made plausible.)

- (53) *Hanako wa {sanzi ni /san-pun} {taore-ta /taore-ru}.*  
 Hanako TOP 3.o'clock TMP for.three.minutes fall-PST fall-NPST
- a. ‘Hanako {fell / will fall} at 3.’
- b. ‘Hanako {lay / will lie} on the ground (after falling) for three minutes.’

Since the temporal adverbs are the only contrasting features in these minimal pairs, it is fair to assume that the difference in readings comes about through world knowledge and considerations of plausibility. But crucially, the examples also show that the respective phases of the events are made accessible by the semantics.

In combination with *-tei-*, the same sentence radicals exhibit the same fluidity of meaning; this time it is observed as the contrast between the Progressive and Resultative readings of the sentence, as shown in (54a) and (54b), respectively.

- (54) *Taroo wa {gohun /mikka} mae ni ano yoohuku*  
 Taro TOP five.minutes three.days before TMP those clothes  
*o ki-hazime-ta ga, mada ki-tei-ru.*  
 ACC {put.on/wear}-begin-PST but still {put.on/wear}-TEI-NPST
- a. ‘Taro started putting on those clothes five minutes ago, and he is still putting them on.’
- b. ‘Taro started wearing (i. e., put on) those clothes three days ago, and he is still wearing them.’

The point here is that the difference between the forms without *-tei-* in (52) and (53) is exactly analogous to that between the forms with *-tei-* in (54a) and (54b). The observation that this polysemy is available with simple tense forms, i. e., without additional aspectual morphology, is important, as it has ramifications for the account of the interaction with *-tei-*.

Igarashi and Gunji account for this variability by modifying the notion of temporal trace. Recall from above that so far I have assumed that the temporal trace of an event is a single interval representing its runtime. In essence, Igarashi and Gunji’s proposal can be seen as introducing a temporal trace function which maps events to up to two intervals representing distinct stages.

Specifically, Igarashi and Gunji<sup>29</sup> use three variables ranging over temporal instants (not intervals) and labeled  $s$ ,  $f$ ,  $r$ , subject to the constraint that  $s \leq f \leq r$ . The letters are mnemonic for *start* time, *finish* time, and *reset* time. These times form the boundaries of two adjacent intervals, one extending from  $s$  to  $f$  and the other extending from  $f$  to  $r$ . Let us dub these intervals **ACTIVITY** and **RESULT**, respectively, to highlight the connection to the terminology in the discussion of *-tei-* above, especially in Table 8.<sup>30</sup> Depending on the radical in question, it is possible for either of the intervals to be absent (or strictly speaking durationless, meaning  $s = f$  or  $f = r$ ), which would mean in the first case that the event is instantaneous and in the latter case that it has no lexically encoded result state. It is also possible for either of the times to extend all the way to either or both ends of the time line (expressed, for instance, as  $f = \infty$  or  $r = \infty$ ), meaning that the corresponding endpoint is not well defined.<sup>31</sup>

Certain generalizations about aspectual behavior can then be stated in terms of the intervals **ACTIVITY** and **RESULT**. In the terms of the present chapter, both are part of the temporal trace, but one of them must be chosen as the event time in the compositional interpretation of the sentence.<sup>32</sup> This choice is behind the polysemy between Progressive and Resultative readings observed above. Formally, this is implemented in the “views” I mentioned in Footnote 27 above.

Which readings are actually available for a given radical depends on its aspectual properties, which can be stated in terms of **ACTIVITY** and **RESULT**. For instance, one important criterion in Igarashi and Gunji’s framework is whether **ACTIVITY** is extended or instantaneous (i.e., whether  $s < f$  or  $s = f$ ), their way of distinguishing between the two verb classes “activity” and “achievement,” respectively.<sup>33</sup> Further distinctions are drawn depending on whether **ACTIVITY** has an endpoint in time (if it does not, then **RESULT** must have zero duration). A similar distinction is drawn for **RESULT**. The emerging classification of predicates can then be used in predicting which readings a given form on its own can have (Activity, Result, or both), and

<sup>29</sup> I follow the exposition of Gunji (2004) because it is the most recent version. It does not crucially differ from Igarashi and Gunji (1998) in relevant respects.

<sup>30</sup> Igarashi and Gunji are not explicit as to whether the intervals in question are open or closed, or whether that distinction matters. Although this is an important matter, I refrain from exploring it any further in this chapter. Hence I will not propose names for these two interval types in terms of  $s$ ,  $f$ ,  $r$  in the usual way, since that would require introducing a distinction between round and square brackets.

<sup>31</sup> It should be kept in mind that the information encoded in these formulas is supposed to model the way the events in question are *represented* by the linguistic expressions. In particular, neither the (un-)definedness nor the location of the various time points are intended as metaphysical facts.

<sup>32</sup> Igarashi and Gunji introduce a system of salience hierarchies and preferences to account for the fact that some readings are dispreferred and only available with temporal adverbs or strong contextual indicators.

<sup>33</sup> Gunji (2004, Fn. 5) notes that Vendler’s accomplishments are subsumed under “activities” under this usage.

which readings are available for combinations with *-tei-*. For more details, the reader is referred to the cited works.

### 3.2.2 Denotation

Having settled all this background, we can now see what the denotation of *-tei-* might look like and how it interacts with the other expressions discussed so far. I will here loosely follow the presentation in M. Kaufmann and S. Kaufmann (2018), who in turn take inspiration from Igarashi and Gunji (1998); Gunji (2004).

Two things are worth reiterating before we start. First, *-tei-* only takes nonstative sentence radicals as its arguments. This was one of Kindaichi's criteria in defining statives, discussed in (49) above. Secondly, I assume two homophonous versions of *-tei-*, one for its Ongoing reading (giving rise to Progressive and Resultative readings of the sentence), the other for its Anterior reading (giving rise to the Experiential).

(55) **Ongoing *-tei-*:  $TEI_o$ .**

If Rad denotes a property of events, then  $[Rad\ TEI_o]$  is true of  $\langle i, j \rangle$  if and only if

- a.  $i \subseteq j$  if  $i \neq s$  and
- b. for some  $e$  in the temporal trace of a Rad-event,  $j \subseteq e$

In (55), the condition that  $j$  contains “an element of” the temporal trace of a Rad-event is intended to accommodate the revised notion of a temporal trace according to which it is a set containing up to two intervals, corresponding to either the activity or result phase. The condition on the temporal relation between  $i$  and  $j$  is identical with the one given for ASP when it combines with non-statives. Thus (55) accounts for the dual nature of  $TEI_o$ : inwardly, it selects for non-stative complements, but outwardly, in terms of what it contributes to the interpretation of the sentence, it behaves like an Imperfective.

To see this definition at work in an example, consider (56). The same meaning is derived for the Progressive and Resultative readings in (56a,b); they differ in which element of the temporal trace, ACTIVITY or RESULT, is the locus of the event time.

(56) *Hanako ga kinoo kimono o ki-tei-ta.*

Hanako NOM yesterday kimono ACC {put.on/wear}- $TEI_o$ -PST

- a. ‘Hanako was putting on a kimono yesterday.’
- b. ‘Hanako was wearing a kimono yesterday.’  
 $[[\text{yesterday} [[\text{Hanako} \{\text{put.on/wear}\}]TEI_o]]PAST]$  is true of  $\langle s, r \rangle$

- (i) if and only if  $r < s$  and  $[\text{yesterday } [[\text{Hanako } \{\text{put.on/ wear}\}]\text{TEI}]]$  is true of  $\langle s, r \rangle$
- (ii) if and only if  $r < s$  and  $\text{YESTERDAY}$  is true of  $r$  and  $[[\text{Hanako } [\text{yesterday}]\{\text{put.on/wear}\}]\text{TEI}]$  is true of  $r$
- (iii) if and only if  $r < s$  and  $\text{YESTERDAY}$  is true of  $r$  and for  $[\text{tei}]$  some  $e$  in the temporal trace (i.e., activity or result) of an event of Hanako putting on or wearing a kimono,  $r \subseteq e$ .

The adverb *kinoo* ‘yesterday’ is responsible for the fact that (56) could not have Nonpast tense: both the adverb and the tense place a constraint on the temporal location of  $r$  relative to  $s$ . Those constraints are inconsistent with Nonpast but consistent with Past.

However, Nonpast tense is compatible with Anterior *-tei-*, symbolized here as  $\text{TEI}_A$ . I follow M. Kaufmann and S. Kaufmann (2018) in assuming that  $\text{TEI}_A$  is semantically rather different from its counterpart  $\text{TEI}_O$ , the crucial difference being that it does not combine directly with sentence radicals, but instead with radicals that have already combined with the covert aspectual operator ASP. The most important direct consequence of this difference is that  $\text{TEI}_A$  can take temporal adverbs in its scope. As we will see, this accounts for the fact that past adverbs can co-occur with Nonpast tense. Further predictions follow from the specific semantics assigned to  $\text{TEI}_A$ , to be discussed below. The lexical entry is given in (57). For illustration, consider the derivation in (58).

(57) **Anterior *-tei-*:  $\text{TEI}_A$ .**

$[\phi \text{TEI}_A]$  is true of  $\langle i, j \rangle$  if and only if

- a.  $i \subseteq j$  if  $i \neq s$  and
- b. for some  $k < j$ ,  $\phi$  is true of  $\langle j, k \rangle$

(58) *Hanako ga kinoo taore-tei-ru.*

Hanako NOM yesterday fall- $\text{TEI}_A$ -NPST

‘Hanako has the experience of falling yesterday.’

$[[[\text{yesterday } [[\text{Hanako fall}]\text{ASP}]]\text{TEI}_A]\text{NPST}]$  is true of  $\langle s, r \rangle$

- (i) if and only if  $s \leq r$  and  $[[\text{yesterday } [[\text{Hanako fall}]\text{ASP}]] [\text{NPST}]\text{TEI}_A]$  is true of  $\langle s, r \rangle$
- (ii) if and only if  $s \leq r$  and for some  $k < r$ ,  $[\text{yesterday } [[\text{Hanako } [\text{TEI}_A]\text{fall}]\text{ASP}]]$  is true of  $\langle r, k \rangle$
- (iii) if and only if  $s \leq r$  and for some  $k < r$ , yesterday is true of  $[\text{yesterday}]$   $k$  and  $[[\text{Hanako fall}]\text{ASP}]$  is true of  $\langle r, k \rangle$
- (iv) if and only if  $s \leq r$  and for some  $k < r$ , yesterday is true  $[\text{ASP}]$  of  $k$  and  $r \not\subseteq k$  and  $k$  contains the temporal trace of an event of Hanako falling.

Two things are worth pointing out in these truth conditions. First, as seen in (58iv), two constraints are placed on the relationship between the intervals  $r$  and  $k$ :  $TEI_A$  requires that  $k < r$  whereas ASP requires that  $k \not\subseteq r$ . These two conditions are consistent with each other; but notice that the latter is imposed by ASP only in case the embedded sentence radical is non-stative. With a stative radical, ASP would require that  $r \subseteq k$  (since  $r \neq s$ ), which would be inconsistent with  $TEI_A$ . This accounts for the fact that the Experiential reading of  $TEI_A$  is not available with stative radicals.<sup>34</sup>

The other thing worth noting is that the temporal adverb could in principle scope over  $TEI_A$  as well as under it, giving rise to an ambiguity with past adverbs and Past tense. That this is correct is shown by examples like (59), in which the Experiential reading is anchored to a past time.

- (59) *Hanako wa kyonen sudeni hon o san-satu kai-tei-ta.*  
 Hanako TOP last.year already book ACC three-CLF write- $TEI_A$ -PST  
 ‘Hanako had already written three books last year.’

## 4 Reference time in discourse

I have given the truth conditions for matrix sentences in terms of constraints on the relationship between the intervals  $s$  and  $r$ , corresponding to Reichenbach’s speech time and reference time. It is clear that  $s$  is in most contexts fixed to be the time at which the sentence is being used.<sup>35</sup>

It may be less obvious how the reference time is determined and what exactly its role is. This question has been the subject of some confusion and debate in parts of the literature. A case in point is Klein (1992), who expressed puzzlement at the intention behind the Reichenbachian notion. He took it to be meant as the time of an event that is salient in the discourse context, for instance in virtue of having been mentioned in the preceding sentence. The problem Klein saw was that the reference time can be fixed in other ways, without there being a corresponding salient event. Klein (1992, 1994) then substituted his own notion of a “topic time” which was supposedly free of such conceptual problems.

Now, as far as its role in the interpretation of sentences is concerned, Klein’s “topic time” is just a relabeling of the Reichenbachian “reference time.”<sup>36</sup> Nor do

<sup>34</sup> Nor is the Ongoing reading of *-tei-* available with statives; that restriction is directly encoded in the definition for  $TEI_O$  in (55).

<sup>35</sup> There are exceptions, such as free indirect discourse. I do not discuss them here.

<sup>36</sup> This is not to say that Klein simply channeled Reichenbach’s original proposal. The point is rather that there had always been some variation in the ways in which authors employed the Reichenbachian notions, and Klein could have expressed his ideas just as easily in that framework.

Klein's conceptual concerns about the status of Reichenbach's reference time seem justified, especially in view of the fact that the latter had been formalized and applied successfully in earlier work in formal semantics (more on this below). In any case, Kleinian "topic time" and Reichenbachian "reference time" now exist side by side in the semantic literature as terms for essentially the same concept.

Much work in formal semantics has been directed at exploring the role of aktions-art as a contributing factor in the temporal interpretation of discourses spanning multiple sentences. Temporal interpretation was one of the earliest motivations and applications of Discourse Representation Theory (Kamp 1981; Kamp and Reyle 1993; Kamp et al. 2011; Kamp 2017). The importance of a Reichenbachian reference time in keeping track of temporal relations across sentences in discourse was the focus of much research starting in the 1980s (Hinrichs 1981, 1985; Partee 1984; Hinrichs 1986; Dowty 1986; Nerbonne 1986, among others).

Work in this vein was concerned with linguistic clues which convey how the events and states whose existence is asserted in the course of a coherent narrative are related to each other in time. Partee (1973) had first discussed the dependence of tenses on preceding discourse under the label of "temporal anaphora." Subsequent work examined in detail how this dependence was driven and constrained by temporal adverbs and connectives as well as aspectual properties.

The general picture is that each sentence inherits its reference time  $r_i$  from the preceding one (unless it occurs discourse-initially) and passes on a reference time  $r_o$  for subsequent discourse to inherit.<sup>37</sup> It turns out that the relationship that sentences impose on  $\langle r_i, r_o \rangle$  depends in part on their aspectual properties. Thus for instance, Hinrichs (1986) observed that in English, accomplishments and achievements move the reference time forward ( $r_i < r_o$ ) whereas statives, activities and progressives do not ( $r_i = r_o$ ). This is illustrated with the sequence in (60) (see also Partee 1984).

- |      |                                  |                                       |
|------|----------------------------------|---------------------------------------|
| (60) | Jameson entered the room,        | shut the door carefully, and          |
|      | e1                               | e2                                    |
|      | switched off the light.          | It was pitch dark around him, because |
|      | e3                               | s1                                    |
|      | the Venetian blinds were closed. |                                       |
|      | s2                               |                                       |

Applying the framework developed above to these English sentences, each of the three eventive clauses locates the temporal trace of an event of the required kind in its reference time  $r_i$  and sets up a new reference time  $r_o$  for the next sentence, subject to the condition that  $r_o$  be located "right after"  $r_i$ , where "right after" is a vague and

<sup>37</sup> I use  $r_i$  and  $r_o$  mnemonically as "input" and "output" reference times, suggesting a dynamic perspective, although such terminology was not used until later (e. g., Portner 2003).

context-dependent notion. Each of the two stative clauses locates its reference time within an interval of which its sentence radical is true and does not set up a distinct output reference time. Glossing over details of implementation, we can say that the five sentences are interpreted as imposing conditions on four reference times,  $r_0, \dots, r_3$ , their relationships with each other and with the speech time  $s$  as follows:

- (61) a.  $r_0 < s$  and  $r_0$  contains the temporal trace of an event of Jameson entering the room and  $r_0 < r_1$   
 b.  $r_1 < s$  and  $r_1$  contains the temporal trace of an event of Jameson shutting the door carefully and  $r_1 < r_2$   
 c.  $r_2 < s$  and  $r_2$  contains the temporal trace of an event of Jameson switching off the light and  $r_2 < r_3$   
 d.  $r_3 < s$  and [it is pitch dark] is true of  $r_3$   
 e.  $r_3 < s$  and [the Venetian blinds are closed] is true of  $r_3$

Interestingly, the Hinrichs-style generalizations about the discourse role of statives versus eventives resemble Kudo's (this volume) observations on Japanese aspect in discourse, specifically the observation that perfective and "durative" sentences impose sequentiality and simultaneity, respectively. Indeed, it is striking that a faithful translation of (60) into Japanese, given in (62), features Perfective clauses as translations of the English ones, and Imperfective clauses, including one with Resultative *-tei-*, for the English stative ones.<sup>38</sup> The formal analysis developed earlier in this chapter, when augmented with rules for trans-sentential interpretation to the effect that Perfectives advance the reference time whereas Imperfectives do not, would deliver the same interpretation as (61).

- (62) *Jameson wa heya ni hait-te, doa o sintyoo-ni*  
 Jameson TOP room GOAL enter-GER door ACC carefully  
*sime, denki o kesi-ta. Itasudare ga*  
 shut<sub>tr</sub>-INF light ACC switch.off-PST Venetian.blinds NOM  
*simat-tei-ta kara, mawari ga makkura dat-ta.*  
 shut<sub>in</sub>-TEI-PST because surroundings NOM pitch.dark COP-PST

This parallelism between English and Japanese suggests two things: First, the connection between aktionsart and discourse interpretation is not arbitrary and language-dependent, but at least in part tied to language-independent cognitive princi-

<sup>38</sup> Notice that in the Japanese translation the clauses are chained together with either the particle *-te-* or the 'infinitive' verb stem, with only a single tense appearing at the end of the whole complex. Thus, tense does not play any role in the sequencing of the three events relative to each other.



ples and world knowledge, especially as it relates to the denotations of Imperfective and Perfective sentences. Secondly, the findings of formal semantic investigations of the phenomenon in other languages are also applicable, to a considerable extent at least, to Japanese.

Regarding this last point, it is generally agreed now that the aspectual properties of sentences are not the only factor determining their temporal relations. For instance, both of the sequences in (63) (cited here from Asher and Lascarides 2003) relate two eventive sentences to each other, yet on the most salient interpretation, the sequence of sentences mimics the sequence of reported events only in (63a), not in (63b).

- (63) a. Max fell. John helped him up.  
       b. Max fell. John pushed him.

This difference cannot be explained in terms of the aspectual or temporal makeup of the sentences alone. Instead, such pairs show that the tendency for eventives to advance the reference time can be overridden if it “makes sense” to do so, i. e., if the opposite order of events makes for a more *coherent* interpretation.

It is now generally agreed that the temporal interpretation of multi-sentence sequences is not fully determined by temporal and aspectual information from the sentences. Instead, that temporal and aspectual information is but one factor feeding into the construction of a coherent overall structure in which the sentences (or their constituents) find their place. Other factors include defeasible inferences of plausibility based on world knowledge and the contents of the sentences. Such discourse structures are organized by *rhetorical relations*.

Languages differ in the extent to which rhetorical relations must be overtly marked. In Japanese, the interpretation which reverses the order in a case like (63b) is not readily available unless the rhetorical relation involved – the second sentence serving as an *explanation* for the first – is overtly marked. Thus while both (64a,b) can serve as translations of (63b), the reversed order is only available in (64b), which contains *no-da*, lit. ‘it is that,’ which in this case serves to mark the explanatory role of the second sentence.<sup>39</sup>

- (64) *Makkusu ga taore-ta.*  
       Max       NOM fall-PST  
       ‘Max fell.’  
       a. *Zyon ga osi-ta.*  
       John   NOM push-PST  
       ‘[Then] John pushed him.’

<sup>39</sup> *No-da* consists of the nominalizing particle *no* and the copula *da*. Marking explanation is just one of the uses of this versatile marker. See Noda (1997) for a detailed investigation.

- b. *Zyon ga osi-ta no da.*  
 John NOM push-PST NMLZ COP.NPST  
 ‘[That’s because] John pushed him.’

There are a number of approaches to the study of rhetorical relations, differing in various respects including the inventories of relations (Asher and Lascarides 2003; Hobbs 1985; Hobbs et al. 1993; Kehler 2002; Mann and Thompson 1988; Sanders et al. 1992). This topic goes beyond the scope of the present chapter.

## 5 Conclusion

This chapter had several goals, and while it would have been impossible in the space provided to serve them all in equal measure, it is my hope that a few points did emerge in enough detail to stimulate and enable further explorations. Here I briefly summarize some larger themes and acknowledge some gaps in coverage.

My first goal in this chapter was to give a descriptive overview of the most important phenomena in Japanese tense and aspect. Given space constraints, the selection of phenomena was of necessity incomplete, but I did discuss most of what I consider to be the major themes: tenses in matrix clauses and temporal adjunct clauses, situation aspect and viewpoint aspect, with special emphasis on the peculiar semantic versatility of the *-tei-* form. However, a number of other, equally important topics were left untouched. To name but a few examples, these include embedding contexts other than temporal adjunct clauses (e.g., attitude ascriptions and relative clauses); light verbs with aspectual meanings (e.g., compounds of the form *V-te aru*, *V-te iku*, *V-te kuru*, *V-tuzukeru*, *V-te simau*) (Igarashi and Gunji 1998; Kinsui et al. 2000; Kubota 2010; see also Jacobsen this volume); the question whether resultative *-ta* in prenominal position is distinct from the Past tense marker *-ta* (Ogihara and Fukushima 2015); and the temporal makeup of complex sentences such as conditionals (Arita 2007, 2009). These are substantial omissions, but I do not make excuses for them. I chose to discuss a few things in some depth, rather than run through a laundry list of miscellanea.

My second goal was to sketch a formal framework for the analysis of the data discussed, in rough outline but still in enough detail to showcase what is valued and emphasized in formal semantic analysis. Of central concern to such analysis is compositionality in a strong sense: assigning denotations to all ingredients of a given class of expressions, down to the smallest parts, in a way that is both independent of the denotations of other expressions and uniform across a whole range of uses. It is these desiderata, combined with general criteria of simplicity, that cast doubt on the viability of certain alternative proposals.

We saw this at work in two cases. One was the purported three-way ambiguity of *toki* ‘when’: the three homophonous lexical items postulated there differed both in

their selection of complement clauses and in the semantic constraints they imposed. However, those semantic constraints were largely a restatement of the semantic characteristics that those complements already possessed independently ('largely' because of one minor twist involving Imperfectives in embedded versus matrix contexts – see Section 2.3.3 above). The other case was the attempt to explain the selection of Nonpast complements by *mae* 'before' in terms of an *earliest* operator inherent in the lexical semantics of the connective. The fact that the next connective over, *ato* 'after', not only allows Past complements but also disallows Nonpast ones is utterly mysterious on such an account, given that "after" is said to involve an *earliest* operator just like "before." To be sure, none of this is conclusive proof that the account developed here is superior on all counts. But it was not the goal of this chapter to establish that, nor could it have been in a survey like this.

And sure enough, in extending the coverage of the account to additional phenomena, additional complexities arise which call for refinements. This was illustrated in the section on the aspectual operator *-tei-*, which required a more fine-grained representation of aspectual distinctions than had been called for in the earlier sections. Further refinements even beyond those proposed in this chapter would be needed to cover some of the phenomena mentioned at the beginning of that section.

A few themes and observations of a more general nature emerge from the material covered in this chapter. For instance, it is scarcely by coincidence that an association of the Perfective with a shift in reference time shows up at two different levels: on the one hand, Perfective sentence radicals impose the condition that the event time and the reference time be disjoint. (In this chapter this constraint was contributed by the ASP operator whenever it combines with a Perfective radical.) On the other hand, at the discourse level, Perfectives tend to advance the reference time (or to shift it backwards, as we saw in Section 4, example (63); in any case, the reference time of the sentence in question is disjoint from that of the preceding sentence). One would like to have an explanation of these two facts, preferably a single explanation for both, in terms of some deep commonality. At the moment I cannot offer such an explanation.

Another generalization to emerge from the discussion is a fairly common and widely applicable one: embedded contexts reveal more about the semantic properties of a linguistic form than matrix contexts. Above, the facts really only became complicated when we turned to temporal adjunct clauses, and more complicated still with the introduction of further aspectual morphology. At the same time, and this is yet another interesting conclusion to draw from this chapter, a considerable number of observations were not particularly surprising and in line with what is known about completely unrelated languages. This concerns, for instance, the fact that Nonpast matrix clauses can only have a truly "present" interpretation (i.e., one which locates the event in question at the speech time) when they are Imperfective; Nonpast Perfectives invariably have future reference. The same is true in English and many other languages. Also common to many languages is the fact that habitual readings are

exceptions to the generalization just stated. Another rather surprising fact is the ease with which accounts of the temporal organization of discourse that were developed for English and related languages also apply to Japanese. Such cross-linguistic commonalities call for an explanation. I could only speculate where we might look for such explanations or what form it might take. The quest for such deeper revelations continues to make research in temporal semantics a vibrant and fascinating enterprise.

## Acknowledgments

I am grateful to Yukinori Takubo for invaluable discussions, to both editors for their patience and feedback, and to an anonymous reviewer for detailed and helpful comments. I also thank Yukinori Takubo and Kyoto University for hospitality during a visit in Fall, 2015, when part of this work was carried out.

## Additional abbreviations

GOAL – goal, NPST – nonpast, TMP – temporal, tr – transitive, in – intransitive

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This chapter is concerned with the discourse functions of tense and aspect in finite verbal predicates in present-day Japanese. The tense and aspect system of modern standard Japanese consists of the following four fundamental forms.

| Aspect Tense | Perfective  | Durative        |
|--------------|-------------|-----------------|
| Non-past     | <i>suru</i> | <i>site-iru</i> |
| Past         | <i>sita</i> | <i>site-ita</i> |

(1) *Asita no asa Taroo wa sanpo suru.*  
tomorrow GEN morning Taro TOP walk do.NPST  
'Tomorrow morning Taro will take a walk.'

(2) *Kinoo no asa Taroo wa sanpo si-ta.*  
yesterday GEN morning Taro TOP walk do-PST  
'Yesterday morning Taro took a walk.'

(3) *Ima Taroo wa sanpo site-iru.*  
now Taro TOP walk do-DUR.NPST  
'Taro is now taking a walk.'

<https://doi.org/10.1515/9781614512073-008>



- (4) *Ano toki Taroo wa sanpo site-i-ta.*  
 that time Taro TOP walk do-DUR-PST  
 ‘At that time Taro was taking a walk.’

Aspect characterizes the internal temporal structure of the situation denoted by the verb phrase. Durative aspect is marked by *-te iru* (non-past) and *-te ita* (past), as illustrated in (3) and (4). While (3) and (4) refer to progressive actions in the present and the past, (1) and (2), involving the bare form of verbs, refer to perfective actions in the future and the past. Note that perfective meaning is not marked with an overt morpheme. The difference between (3) and (4) is one of tense, namely a temporal location that includes the present moment versus a temporal location situated before the present moment, whereas the difference between (2) and (4) is one of aspect.

While the morphology of tense and aspect is part of clausal structure, its functional scope is not the propositional semantics of the atomic event but rather the connectivity of clauses in discourse. A discourse is defined as a text in which the speaker relates a series of real or fictive events in the temporal order in which they are supposed to have taken place. An example of such a short discourse is Julius Caesar’s famous statement in Latin in (5).

- (5) *Veni, vidi, vici.*  
 come.PERF.1SG see.PERF.1SG conquer.PERF.1SG  
 ‘I came, I saw, I conquered.’

This chapter considers two discourse types: spoken discourse and narrative discourse (narrative texts from novels). These are examined separately, as narrative discourse differs from spoken discourse with regard to the selection of verb tenses. Linguists and literary scholars have argued that tenses can be grouped into two main categories: tenses related to the deictic system of “I-here-now” and tenses not related to this deictic system.

## 2 Grammatical aspect

Aspect characterizes the internal temporal structure of the situation denoted by the verb phrase.<sup>2</sup> The term aspect is used in both a narrower sense, in which it refers to

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<sup>2</sup> The modern study of aspect in Japanese can be traced back to the pioneering study by Kindaichi (1950). Kindaichi classifies verbs into four groups: stative verbs, durative verbs, instantaneous verbs, and a fourth class of stative verbs that appear in clause final position only in the *-te iru* form. Durative verbs in the *-te iru* form take a progressive interpretation. Instantaneous verbs occurring in the *-te iru* form take a resultative interpretation. Okuda (1977) is a critical study of Kindaichi arguing for different criteria to distinguish between durative and instantaneous verbs than those used by Kindaichi.

grammatical categories which have to do with the speaker's perspective on the temporal composition of a situation, and a wider sense, in which it also covers lexical categories relating to the classification of situations. The term *Aktionsart* is often used to denote the latter.

## 2.1 Primary aspectual distinctions

In the area of grammatical aspect, we distinguish two major categories on the basis of their semantics and pragmatics, viz. (a) durative and (b) perfective aspectual categories. The durative/perfective contrast (or unbounded/bounded distinction) is the most central aspectual distinction. While the perfective signals that the situation is viewed as temporally bounded, the durative signals that the situation is viewed as unbounded.

Durative (unbounded) aspect is expressed by *site-iru* (non-past durative) and *site-ita* (past durative). The forms *site-iru* and *site-ita* are used to express either an action in progress ((6), (7) below) or a state resulting from a change ((8), (9) below).

- (6) *Taroo ga aruite-iru.*  
 Taro NOM walk-DUR.NPST  
 'Taro is walking.'
- (7) *Taroo ga aruite-i-ta.*  
 Taro NOM walk-DUR-PST  
 'Taro was walking.'
- (8) *Mado ga aite-iru.*  
 window NOM become.open-DUR.NPST  
 'The window is open.'
- (9) *Mado ga aite-i-ta.*  
 window NOM become.open-DUR-PST  
 'The window was open.'

The forms in (6) and (7) are used for reference to progressive actions in the present and the past. The forms in (8) and (9) express the result of a change in the present and the past. As the examples above show, in standard Japanese the same durative form is used to express both progressive and resultative meaning. In general, change of state verbs cannot be used to express progressive meaning.

Progressive meaning: action verbs:

*aruku* ‘walk,’ *hasiru* ‘run,’ *taberu* ‘eat,’ *yomu* ‘read,’ *sakebu* ‘shout’

Resultative meaning: change of state verbs:

*aku* ‘open<sub>in</sub>,’ *sinu* ‘die,’ *tomaru* ‘stop<sub>in</sub>,’ *tuku* ‘arrive,’ *hairu* ‘enter’

Transitive verbs in which an action is performed by the agent and a change of state occurs in the object can express progressive meaning in the *site-iru* form, as in (10) and (11), although in cases where the agent acts on a part of his/her own body in a reflexive meaning structure, as in (12) and (13), the interpretation given to the *site-iru* form is normally resultative.

- (10) *Taroo ga mado o akete-iru.*  
 Taro NOM window ACC open-DUR.NPST  
 ‘Taro is opening the window.’

- (11) *Taroo ga ki o kitte-i-ta.*  
 Taro NOM wood ACC cut-DUR-PST  
 ‘Taro was cutting wood.’

- (12) *Taroo ga kuchi o akete-iru.*  
 Taro NOM mouth ACC open-DUR.NPST  
 ‘Taro’s has his mouth open.’

- (13) *Taroo ga te o kitte-i-ta.*  
 Taro NOM hand ACC cut-DUR-PST  
 ‘Taro’s hand was cut.’

Perfective meaning, which is expressed by *suru* (non-past perfective) and *sita* (past perfective), is not marked with an overt morpheme. The non-past perfective form *tateru* ‘build’ in (14) is used for reference to the completion of an action and a change in the future. As the house has not been built at speech time, the perfective form has future reference. Hence there is a correlation between perfective aspect and future time reference. In contrast, the past perfective form *tateta* ‘built’ in (15) expresses the completion of an action and a change in the past.

- (14) *Taroo ga ie o tateru.*  
 Taro NOM house ACC build.NPST  
 ‘Taro will build a house.’

- (15) *Taroo ga ie o tate-ta.*  
 Taro NOM house ACC build-PST  
 ‘Taro built a house.’

The perfective forms (*suru* and *sita*) also have a secondary ingressive (inchoative) reading in atelic verbs. The perfective forms in (16) and (17) focus on the initial temporal boundary of the action. Accordingly, *aru* and *naku* here mean ‘started to walk’ and ‘start to cry’, respectively.

- (16) *Hora! Akatyan ga arui-ta.*  
 look baby NOM walk-PST  
 ‘Look! The baby started to walk!’

- (17) *A! Akatyan ga naku.*  
 oh baby NOM cry.NPST  
 ‘Oh! The baby is starting to cry.’

## 2.2 The path of grammaticalization

The existential verb for animate subjects in Japanese is *iru* ((18a, b) below), with a corresponding past form *ita*. The durative form *site-iru* results from the grammaticalization of the existential verb following the gerund form (the *-te* form) of a verb, in which case the subject need not be animate ((19a, b) below). The change that takes place to derive durative temporal meaning is the loss of the spatial meaning inherent in the existential verb.

- (18) a. *Kawa ni kodomo ga iru.*  
 river LOC child NOM exist.NPST  
 ‘A child is in the river.’

- b. *\*Kawa ni isi ga iru.*  
 river-LOC rock-NOM exist.NPST  
 ‘A rock is in the river.’

- (19) a. *Kodomo ga asonde-iru.*  
 child NOM play-DUR.NPST  
 ‘A child is playing.’

- b. *Isi ga korogatte-iru.*  
 rock NOM roll-DUR.NPST  
 ‘A rock is rolling.’

Once this reanalysis had occurred, *site-iru* was able to undergo phonological reduction to *site-ru* in spoken discourse.

- (19') a. *Kodomo ga asonde-ru.*  
 child NOM play-DUR.NPST  
 'A child is playing.'

The grammaticalization and secondary developments of durative forms in Japanese can be represented as in Table 2.

**Table 2:** The grammaticalization and development of durative forms

| Lexical source     | Primary durative aspect | Secondary meaning    |
|--------------------|-------------------------|----------------------|
| <i>iru</i> 'exist' | → progressive           | → habitual           |
|                    | → resultative           | → perfect (anterior) |

Habitual (including iterative) readings are expressed by the durative forms *site-iru* and *site-ita*. As seen in Table 2, the habitual develops out of the progressive. Progressive meaning is expressed with verbs such as *aruku* 'walk' and *yomu* 'read' that denote an action. Habitual meaning is expressed with both action verbs (20) and change of state verbs (21). The habitual reading is normally highlighted by the use of certain temporal adverbs such as *itumo* 'always' and *maiasa* 'every morning'.

- (20) *Taroo wa itumo hon o yonde-iru.*  
 Taro TOP always book ACC read-DUR.NPST  
 'Taro is always reading books.'
- (21) *Gakkoo no mon wa maiasa sitizi ni aite-i-ta.*  
 school GEN gate TOP every-morning seven TMP open-DUR-PST  
 'The school gate opened every morning at seven.'

Note that the habitual reading can also be expressed by the perfective forms *suru* and *sita* ((22), (23) below). While the perfective is used for reference to the completion of an action in the future, the habitual is used for reference to actions in the present, as in (22).

- (22) *Taroo wa itumo hon o yomu.*  
 Taro TOP always book ACC read.NPST  
 'Taro always reads books.'
- (23) *Gakkoo no mon wa maiasa sitizi ni ai-ta.*  
 school GEN gate TOP every-morning seven TMP open<sub>in</sub>-PST  
 'The school gate opened every morning at seven.'

Furthermore, the habitual interacts with non-actual mood (irrealis modality). Sentences with a general reading may be expressed by perfective forms, as in (24) below.

- (24) *Biibaa wa damu o tukuru.*  
 beaver TOP dam ACC build.NPST  
 'Beavers build dams.'

The category of perfect (not to be confused with perfective, discussed above) is expressed by the durative forms *site-iru* and *site-ita*. Historically, the perfect developed out of the resultative. Semantically, the change from resultative to perfect reflects the generalization of meaning from current result to current relevance. Resultative meaning is expressed with verbs that denote a change of state: *sinu* 'die,' *kowareru* 'break<sub>in</sub>,' *simaru* 'close<sub>in</sub>,' *suwaru* 'sit down,' *tuku* 'arrive,' etc. Perfect is expressed with all verbs, because a major feature associated with the perfect is current relevance, a feature that can potentially be associated with any verb.

- (25) *Watasi wa itizikanmae ni yuusyoku o tabete-iru.*  
 I TOP one.hour.ago TMP dinner ACC eat-DUR.NPST  
*Moo nanimo tabe-taku-nai.*  
 anymore anything eat-DESI-NEG  
 'I ate dinner an hour ago. I don't want to eat anything (any)more'

- (26) *Taroo wa kinoo tosyokan de kono hon o yonde-iru.*  
 Taro TOP yesterday library LOC this book ACC read-DUR.NPST  
*Dakara kaw-ana-kute ii.*  
 so buy-NEG-GER be.good-NPST  
 'Taro read this book yesterday at the library. Therefore we don't need to buy it (now).'

The perfect involves three features: 1) anteriority, 2) perfectivity, and 3) current relevance, so that the present perfect can be characterized as a past perfective event with current relevance to the present. Note that the Japanese perfect form *site-iru* is compatible with specific time reference, such as *kodomo-no toki* 'during one's childhood'.

- (27) *Watasi wa kodomo no toki amerika ni itte-iru. Dakara*  
 I TOP child GEN time America LOC go-DUR.NPST so  
*eigo ga hanas-eru.*  
 English NOM speak-POT.NPST  
 'I lived in (lit., have gone to) America when I was a child, so I can speak English.'

The present perfect can also be expressed by the perfective form *sita*, as in (28) below.

- (28) *Taroo wa moo tyuusyoku o tabete-iru/tabe-ta.*  
 Taro TOP already lunch ACC eat-DUR.NPST/eat-PST  
 ‘Taro has already eaten lunch.’

The past perfective form *sita* in modern Japanese developed from *sitari* (*site-ari*) in classical Japanese, a form based on the existential verb *ari* which expressed resultative and perfect meaning. In modern Japanese the resultative meaning has been lost in clause final predicates. The derivational relationship among resultative, perfect, and past (perfective) meaning can be summarized as in Table 3 for *sita* and *site-iru*.

**Table 3:** Derivational relationship among resultative, perfect, and past (perfective) meaning

| Resultative     | → Perfect       | → Past (perfective) |
|-----------------|-----------------|---------------------|
| <i>*sita</i>    | <i>sita</i>     | <i>sita</i>         |
| <i>site-iru</i> | <i>site-iru</i> | <i>*site-iru</i>    |

### 3 The discourse functions of aspect

Grammatical aspect has the discourse functions indicated in Table 4.

**Table 4:** Discourse functions of grammatical aspect

| Form                     | Aspectual meaning | Discourse function |
|--------------------------|-------------------|--------------------|
| <i>suru/sita</i>         | perfective        | sequentiality      |
| <i>site-iru/site-ita</i> | durative          | simultaneity       |

The relationship between aspectual meaning and discourse function is illustrated in the following examples. In (29), where the verb in each of the two clauses is perfective, the two events occur in sequence. In (30), by contrast, where the first clause has a verb that is perfective and the second clause a verb that is durative, the two events overlap temporally.

- (29) *Taroo ga haitte-kita. Hanako wa koohii o ire-ta.*  
 Taro NOM enter-come-PST Hanako TOP coffee ACC prepare-PST  
 ‘Taro entered. (Then) Hanako prepared coffee.’

- (30) *Taroo ga haitte-kita. Hanako wa koohii o*  
 Taro NOM enter-come-PST Hanako TOP coffee ACC  
*irete-i-ta.*  
 prepare-DUR-PST  
 'Taro entered (while) Hanako was preparing coffee.'

Two kinds of information are communicated by aspect systems. The first is concerned with the temporal shape of a particular event, i. e., whether the event is viewed as perfective (bounded) or durative (unbounded). The second is concerned with the relationship between one event and the next, i. e., whether the events occur in sequence or overlap. Sequential events are most naturally expressed by perfective aspect, while overlapping events are typically conveyed by durative aspect.

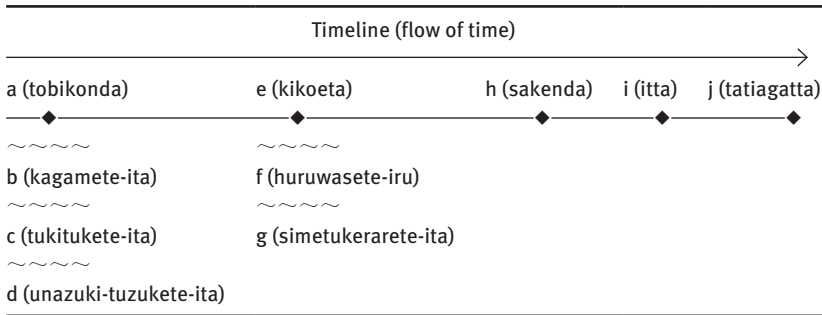
The example in (31) below is from the novel *Junkoku* 殉国, by Akira Yoshimura (1967), which portrays the fighting in Okinawa during World War II. The following passage, which has been somewhat simplified from the original, depicts a wartime scene in which Okinawan civilians and Japanese soldiers are hiding behind a large rock.

- (31) a. *Kare wa gake ni tika i wakage ni tobikon-da.*  
 he TOP cliff LOC near behind-rock GOAL jump(PERF)-PST  
 'He jumped behind a rock near the cliff.'
- b. *Sono kuukan ni wa hei to zyuumintati ga mi o*  
 that space LOC TOP soldier and civilian NOM body ACC  
*kagamete-i-ta.*  
 crouch-DUR-PST  
 'In that space, soldiers and civilians were crouching down.'
- c. *Hei ga kodomo o dai-ta onna ni zyuu o*  
 soldier NOM child ACC hold-PST woman DAT gun ACC  
*tukitukete-i-ta.*  
 point-DUR-PST  
 'A soldier was pointing his gun at a woman holding a child.'
- Ii ka, kodomo ga nai-tara korosu zo.*  
 OK Q child NOM cry-COND kill(PERF).NPST SFP  
 (The soldier said:) "OK, if that kid cries, I'll kill him!"
- d. *Onna wa kikaiteki-ni unazuki-tuzukete-i-ta.*  
 woman TOP mechanically nod-continue-DUR-PST  
 'The woman mechanically (repetitively) continued to nod.'
- e. *Sono-uti-ni, hikui koe ga haigo de kikoe-ta.*  
 shortly.after low voice NOM behind LOC be.heard-PST  
 'Shortly after that, he heard a muddled voice behind him.'



- f. *Hurimuku to onna ga kutibiru o*  
 look.back.NPST COND woman NOM lip ACC  
*huruwasete-iru.*  
 make.tremble-DUR.NPST  
 ‘When he looked back, the woman’s lips were trembling.’
- g. *Onna no ryoo-tenohira no aida ni wa midorigo*  
 woman GEN both-palms GEN between LOC TOP baby  
*no kubi ga simetuke-rare-te-i-ta*  
 GEN neck NOM choke-PASS-DUR-PST  
 ‘Between the woman’s two palms the baby was being choked.’
- h. *Umanori ga hazimat-ta.*  
 attack NOM start-PST  
 “‘The attack has started,” ...  
*Kakekonde-ki-ta hei ga saken-da.*  
 run.up-come-PST soldier NOM yell(PERF)-PST  
 ... yelled a soldier who had come up running.’
- i. *Sosite koko ni mo teki ga kuru zo to*  
 and here GOAL also enemy NOM come.NPST SFP QUOT  
*it-ta.*  
 say(PERF)-PST  
 ‘Then he said, “The enemy will come here too!”’
- j. *Zyuumin mo hei mo obie-ta yoo ni*  
 civilian also soldier also become.terrified-PST COMP DAT  
*tatiagat-ta.*  
 stand.up(PERF)-PST  
 ‘Both civilians and soldiers stood up in terror.’

The events related in the passage above can be diagrammed as in Table 5. Perfective forms (◆) mark events occurring in sequence, while durative forms (~~~~) signal simultaneity. That is to say, perfective forms (◆) “move” the narrative forward in time.

**Table 5:** Timeline of events in example (31)

Jakobson (1957: 4) introduced the term *taxis* as a temporal category which is not of the shifter type: “*Taxis* characterizes the narrated event in relation to another narrated event and without reference to the speech event.” Maslov and Petrovic (1988: 8–9) states that in many languages *taxis* is not a separate grammatical category of its own but is united into one category combined with aspect. Hopper (1979) has argued that aspect markers (notably perfective aspect markers) likely originate at the textual level as focus particles or markers of textual foreground. In Japanese, the meanings of simultaneity and sequence regularly emerge as a result of interaction between aspectual forms, so the expression of the *taxis* relation may be viewed as one of the most important discourse functions of aspect (Okuda 1988, Kudo 1995).

### 3.1 Perfective as an event sequencer

As noted above, the typical function of perfective (bounded) aspect in spoken discourse is to characterize events as occurring in sequence. (32) is an example of this involving perfective forms in a non-past, future context.

- (32) *Asita wa kuzi ni eki ni tuku. Sosite*  
 tomorrow TOP nine TMP station GOAL arrive.NPST then  
*Huzisan ni noboru.*  
 Fuji GOAL climb.NPST  
 ‘Tomorrow we’ll arrive at the station at nine. Then we’ll climb Mt. Fuji.’

This is a particularly important function in narrative discourse. Whether in past or non-past contexts, each individual fictive event marked by perfective aspect follows the previous one in the order in which they are narrated, so that perfective aspect advances the plot of the narrative.

The next passage in (33) is taken from the opening of the novel *Yukiguni* 雪国, by Yasunari Kawabata (1937). Except for (33a), the sequence of events is narrated with perfective verb forms.

- (33) a. *Kunizakai no nagai tonneru o nukeru to*  
border GEN long tunnel ACC come.out.NPST COND  
*yukiguni deat-ta.*  
snow-country COP-PST  
‘Upon passing through the long tunnel at the border, it was snow country.’
- b. *Yoru no soko ga siro-ku nat-ta.*  
night GEN depths NOM white-INF become-PST  
‘The depths of the night became white (with snow).’
- c. *Singoosyo ni kisyā ga tomat-ta.*  
signal.station GOAL train NOM stop-PST  
‘The train stopped at the signal station.’
- d. *Mukaigawa no zaseki kara musume ga tatte-ki-te,*  
opposite.side GEN seat ABL girl NOM stand-come-GER  
*Shimamura no mae no garasudo o otosi-ta.*  
Shimamura GEN front GEN window ACC lower-PST  
‘A girl who was sitting in a seat on the other side came over and lowered the window in front of Shimamura.’
- e. *Yuki no reiki ga nagarekon-da.*  
snow GEN cold-air NOM flow.in-PST  
‘Cold snowy air rushed in.’

In Japanese, perfective aspect lacks overt marking, but this lack of marking must be interpreted as meaningful rather than merely the absence of a category of meaning (Bybee 1985: 54). From a diachronic perspective, it is likely that after durative forms developed overt marking, covertly-marked forms became restricted to perfective meaning.

### 3.2 The discourse function of durative aspect

The typical function of durative (unbounded) aspect is to express the temporal overlap of events in spoken and narrative discourse.

In the passage in (34) below (excerpted in simplified form from a novel by Tatsuzō Ishikawa), a man suspected of murder is trying to concoct an alibi in the course of being questioned by a police investigator. The durative *mite-ita* form in this context provides just the appropriate means to express simultaneity with the time under investigation.

- (34) *Motiron issyo-ni Hakone ni nanka ik-imasen yo.*  
 of.course together Hakone GOAL such go-POL.NEG.NPST SFP  
 ‘Of course I didn’t do such a thing as go with him to Hakone.’  
*Boku ni wa aribai ga ar-imasu.*  
 I DAT TOP alibi NOM exist-POL.NPST  
 ‘I have an alibi.’  
*Sono hi wa sinzyuku de eiga o mite-i-ta*  
 that day TOP Shinjuku LOC movie ACC watch-DUR-PST  
*n desu yo.*  
 NMLZ COP.POL.NPST SFP  
 ‘On that day I was watching a movie in Shinjuku.’

In (35), the past durative form *tabete-ita* has a progressive reading and is used to indicate that Taro’s coming back is included within the interval when Hanako was eating dinner.

- (35) *Taroo ga kaette-ki-ta. Hanako wa yuusyoku o*  
 Taro NOM return-come-PST Hanako TOP dinner ACC  
*tabete-i-ta.*  
 eat-DUR-PST  
 ‘Taro came back (while) Hanako was eating dinner.’
- (36) *Taroo ga kaette-ki-ta. Genkan no akari ga*  
 Taro NOM return-come-PST entrance GEN light NOM  
*kiete-i-ta.*  
 go.out-DUR-PST  
 ‘Taro came back. The light at the entrance was out.’
- (37) *Taroo ga kaette-ki-ta. Ie no mae ni kuruma ga*  
 Taro NOM return-come-PST house GEN front LOC car NOM  
*tomatte-i-ta.*  
 stop<sub>in</sub>-DUR-PST  
 ‘Taro came back. A car was parked in front of the house.’

In (36) and (37), the durative forms *kiete-ita* and *tomatte-ita* have a resultative reading and indicate that Taro’s coming back temporally overlaps with these resultant states. Resultative meaning has often been subsumed under the category of perfect meaning, but recent research shows that there is a distinction between the two. According to Bybee et al. (1994: 54), the resultative signals that a state exists as the result of a prior event occurring, and the resultative focuses on that resultant state, while the perfect focuses on the preceding event itself. As seen earlier in Section 2.1, both of these meanings receive expression in *site-iru* and *site-ita* in Japanese.

### 3.3 The discourse function of the perfect

The following examples illustrate the use of the durative forms *site-iru* and *site-ita* to express perfect meaning.

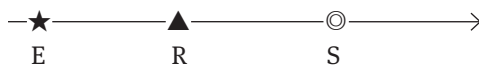
- (38) *Taroo wa itido tyuugoku ni itte-iru.*  
 Taro NOM once China GOAL go-DUR.NPST  
 ‘Taro has been to China once.’
- (39) *Taroo wa sono toki sude-ni tyuugoku ni itido itte-i-ta.*  
 Taro NOM that time already China GOAL once go-DUR-PST  
 ‘At that time Taro had already been to China once.’
- (40) *Sono toki ni wa watasi wa tokkuni sinde-iru daroo.*  
 that time TMP TOP I TOP long.since die-DUR.NPST TENT  
 ‘At that time I will have been long dead.’

The form in (38) is used for reference to perfect in the present, the form in (39) for reference to perfect in the past, and the form in (40) for reference to perfect in the future. In each case, the perfect encodes an event which occurs prior to the temporal time of reference. These three temporal configurations may be represented diagrammatically as in (38’), where E is event time, R is reference time, and S is speech time (Reichenbach 1947).

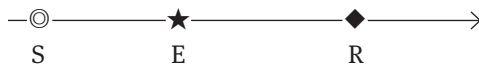
- (38’) Present-perfect perspective: E precedes R(S)



- (39’) Past-perfect perspective: E precedes R and precedes S



- (40’) Future-perfect perspective: E precedes R and follows S



In narrative discourse, the perfect expresses counter-sequentiality, that is, out-of-sequence events that occur earlier in actual time but are reported later in the clause-chain of narrative discourse.

The passage in (41) below is from an article that appeared in the morning edition of the Asahi Newspaper on July 6, 2005, in which Kono Yohei, Chair of the House of Representatives, is reflecting on the events that led to the decision that Japan and Korea would jointly host the World Soccer Championships.

- (41) a. *Seizi reberu demo Nikkan wa yure-ta.*  
 political level even Japan.Korea TOP waver-PST  
 ‘Even on the political level, there were tensions between Japan and Korea.’
- b. *94-nen 10-gatu Kono Yoohei wa Nikkan*  
 1994 October Kono Yohei TOP Japan-Korea  
*gaisyoo-kaigi no yuusyokukai de [dotira*  
 foreign.minister-conference GEN dinner.party LOC whichever  
*ga katte-mo taihen-na koto ni naru]* to  
 NOM win-even troublesome matter DAT become.NPST QUOT  
*kankoku no gaisyoo ni hanasikake-ta.*  
 Korea GEN foreign.minister DAT speak.to-PST  
 ‘At a dinner party at the Japan-Korea foreign ministers’ conference in October 1994, Kono Yohei related to the foreign minister of Korea that “whoever wins, this will be a difficult matter (for our countries politically).”’
- c. *Sono hantosi mae azia-renmei ga*  
 that half.year before Asian.football-confederation NOM  
*kyoosai-kentoo o teian-site-i-ta.*  
 joint.hosting-consideration ACC propose-DUR-PST  
 ‘Six months before that, the Asian Football Confederation had proposed to jointly host the championships.’
- d. *Sinbun-kizi o yon-de kyoosai no te*  
 newspaper-article ACC read-GER joint.hosting- GEN solution  
*mo aru to atama ni at-ta no*  
 also exist.NPST QUOT mind LOC exist-PST NMLZ  
*kamosirenai to Kono wa hurikaeru.*  
 maybe QUOT Kono TOP reflect.NPST  
 ‘Kono reflected that “having read the newspaper article, the idea of jointly hosting the championships may have been there in the back of my mind.”’

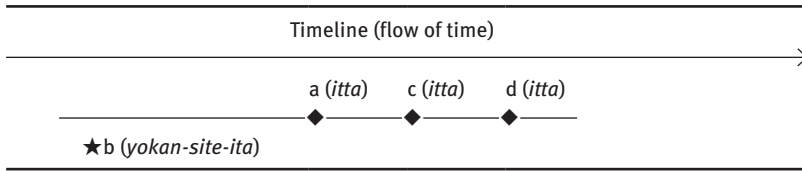
In diagrammatic form, the effect of counter-sequential expression on narrative order may be represented as in (42).

- (42) Real time sequence of events: c (*teian-sita*) → b (*hanasikaketa*)  
 Counter-sequentiality: b (*hanasikaketa*) c (*teian-site-ita*)

All clauses representing events in the actual sequence (the iconic sequence) in which they occur in real time are marked by perfective forms. The strong preference in human communication is to maintain temporal coherence by communicating events in the order in which they actually occur, representing the ordinary, “unmarked” situation. Expressing events in an out-of-sequence order for purposes such as expressing relevance to a later event is therefore a deviation from this ordinary pattern, requiring “marked” expression provided by the perfect form (*site-ita*).

The passage in (43) below is excerpted in somewhat simplified form from the novel *Hi no Utsuwa* 悲の罫 by Kazumi Takahashi (1962). The perfect form *yokan-site-ita* ‘had had a feeling’ expresses a retrospective viewing of an event that occurred earlier in the temporal sequence, signaling a return in time to that event, as diagrammed in Table 6.

- (43) a. *Yoneyama-san ga irasite-ru, demukae-ta*  
 Yoneyama NOM come<sub>HON</sub>-DUR.NPST meet.on.arrival-PST  
*Noriko ga it-ta.*  
 Noriko NOM say-PST  
 “‘Yoneyama is here,’” said Noriko, who met me as I came in.’
- b. *Genkan o akeru izen, morete-i-ta senkoo*  
 front-door ACC open.NPST before seep.out-DUR-PST incense  
*no kaori de kyakuzin no at-ta koto wa*  
 GEN smell INS guest GEN exist-PST COMP TOP  
*yokan-site-i-ta.*  
 have.a.feeling-DUR-PST  
 ‘Before opening the front door, I had had a feeling that a guest was present because there was the smell of incense.’
- c. *Soo ka, watasi wa it-ta.*  
 so Q I TOP say-PST  
 ‘I said (to Noriko), “I see.”’
- d. *Watasi wa senkoo no niou ima no hoo*  
 I TOP incense GEN emit.smell.NPST room GEN direction  
*e it-ta.*  
 LOC go-PST  
 ‘I went in the direction of the room that smelled of incense.’

**Table 6:** Timeline of events in example (43)

Although resultative meaning can be considered as a subtype of perfect meaning, we see here a strong discourse-based rationale for making a distinction between the two, namely that the discourse function of resultative meaning, focusing as it does on the resultant state of an event, is simultaneity, while the function of perfect meaning, focusing as it does on the preceding event itself, is to indicate counter-sequentiality.

### 3.4 The discourse function of the habitual

A verb like *yaku* ‘bake,’ when used in combination with a singular direct object, is understood as characterizing a unique event.

- (44) a. *Taroo ga keeki o yai-ta.*  
 Taro NOM cake ACC bake-PST  
 ‘Taro baked a cake.’
- b. *Taroo ga keeki o yaite-i-ta.*  
 Taro NOM cake ACC bake-DUR-PST  
 ‘Taro was baking a cake.’

The same verb co-occurring with a quantifying adverb and an indefinite plural direct object, by contrast, is able to take on a habitual (iterative) reading.

- (45) a. *Taroo wa itumo keeki o yai-ta.*  
 Taro TOP always cake ACC bake-PST  
 ‘Taro always baked (was baking) cakes.’
- b. *Taroo wa tokidoki keeki o yaite-i-ta.*  
 Taro TOP sometimes cake ACC bake-DUR-PST  
 ‘Taro sometimes baked cakes.’

Habituality can be viewed as extending over possible worlds, so that habituality may interact as a result with non-actual (irrealis) modality. At the same time, habitual aspect functions to provide background information, as illustrated in the following examples. While the perfective form *tataita* ‘hit’ in (46a) and the durative form *non-*



*de-ita* ‘were drinking’ in (47a) are used here to report particular events, the habitual forms *okotta* ‘got (would get) angry’ in (46b) and *tazunete-ita* ‘was (had been) visiting’ in (47b) provide information about the background or setting.

- (46) a. *Taroo ga Ziroo o tatai-ta.*  
 Taro NOM Jiro ACC hit-PST  
 ‘Taro hit Jiro.’
- b. *Warukuti o iw-areru to Taroo wa itumo*  
 badmouthing ACC say-PASS.NPST COND Taro TOP always  
*betuzin. no yoo ni okot-ta*  
 different.person GEN COMP DAT get.angry-PST  
 ‘Whenever someone said something bad about him, Taro would get so angry he was like a different person.’
- (47) a. *Aru nitiyoobi Taroo to Hanako ga koohii o*  
 one Sunday Taro and Hanako NOM coffee ACC  
*nonde-i-ta.*  
 drink-DUR-PST  
 ‘One Sunday Taro and Hanako were drinking coffee.’
- b. *Taroo wa saikin yoku Hanako o tazunete-i-ta.*  
 Taro TOP recently often Hanako ACC visit-DUR-PST  
 ‘Taro had been visiting Hanako often recently.’

## 4 Tense

Tense locates events in time. In finite predicates there is a systematic grammatical distinction between past tense and non-past tense. The past, expressed by the morpheme *-ta*, is used for events before the speech time, whether in perfective aspect or durative aspect. The non-past is used for present events or future events.

While the function of grammatical tense is deictic in spoken discourse, its function in narrative discourse (narrative texts) is non-deictic. The importance of this distinction between two kinds of discourse (modes of utterance) has been noted by linguists such as Weinrich (1964) and Benveniste (1966).

The Japanese term *katari* ‘narrative discourse’ refers to the written narration of events, presented with a minimum of subjective involvement (Kudo 1995). This text type correlates with a non-deictic conception of time where, as noted by Benveniste (1966), no one speaks and the events seem to narrate themselves. The fundamental tense form used here is the past form, which signals non-deictic reference of the event outside the time of the act of narration. The term *hanasiai* ‘spoken discourse,

dialogue', on the other hand, refers to discourse of all types involving a speaker and a listener. With regard to the selection of tense forms, *hanasiai*-type texts exhibit clearly distinguishable features from the *katari* type.

#### 4.1 Tense and temporal reference in spoken discourse

Location in time of an event may receive linguistic expression in various ways. While tense is an obligatory grammatical marker, the temporal reference of finite verbal predicates in spoken discourse is deictic. Temporal adverbs provide additional information about the location in time of the event that the verb denotes. There are both deictic adverbs, which are speech-time oriented, and non-deictic adverbs, which can relate to other contextually salient event times.

- A) Deictic adverbs
  - A1) *kinoo* 'yesterday,' *kyonen* 'last year,' *sakki* 'just before'
  - A2) *mokka* 'now,' *genzai* 'at present'
  - A3) *asita* 'tomorrow,' *rainen* 'next year'
- B) Non-deictic adverbs
  - B1) *zenzitu* 'the day before,' *zennen* 'the year before'
  - B2) *toozitu* 'that day,' *sonotoki* 'that time'
  - B3) *yokuzitu* 'the day after,' *yokutosi* 'the following year'

The two adverbs *kinoo* 'yesterday' and *asita* 'tomorrow' are deictically distinct, as shown by the fact that the former cannot be used with a verb in the non-past tense (47b) and the latter cannot be used with a verb in the past tense (48b).

- (48) a. *Taroo wa kinoo ki-ta.*  
           Taro TOP yesterday come-PST  
           'Taro came yesterday.'
- b. \**Taroo wa kinoo kuru.*  
           Taro TOP yesterday come.NPST  
           \*'Taro will come yesterday.'
- (49) a. *Taroo wa asita kuru.*  
           Taro TOP tomorrow come.NPST  
           'Taro will come tomorrow.'
- b. \**Taroo wa asita ki-ta.*  
           Taro TOP tomorrow come-PST  
           \*'Taro came tomorrow.'

Non-deictic adverbs, on the other hand, can occur with any of the deictic tenses.

- (50) a. *Taroo wa zenzitu ni ki-ta.*  
 Taro TOP the.day.before TMP come-PST  
 ‘Taro came the day before.’
- b. *Taroo wa zenzitu ni kuru.*  
 Taro TOP the.day.before TMP come.NPST  
 ‘Taro will come the day before.’
- (51) a. *Taroo wa yokuzitu ki-ta.*  
 Taro TOP the.day.after come-PST  
 ‘Taro came the day after.’
- b. *Taroo wa yokuzitu kuru.*  
 Taro TOP the.date.after come.NPST  
 ‘Taro will come the day after.’

## 4.2 Tense and temporal reference in narrative discourse

Fictional narrative discourse correlates with a non-deictic conception of time. In this text type, the fundamental tense form is the past or “epic preterite.” The past form expresses the fictional status of the world represented, rather than labeling events reported as past.

In narrative discourse both deictic tense and deictic temporal adverbs are used for non-deictic reference. An example can be seen in the passage in (52) below, excerpted in simplified form from the novel *Mori to Mizuumi no Matsuri* 森と湖のまつり by Taijun Takeda (1958). The story takes place in Hokkaido and involves Ainu and Japanese characters. Bihoro is the name of a town.

- (52) a. A: *Yo-kattara, Kussyaro no Kotan e mawar-anai*  
 be.good-COND Kussharo GEN Kotan LOC go.around.to-NEG.NPST  
*ka. Asoko wa mada itta koto ga nai*  
 Q there TOP still go-PST COMP NOM exist.NEG.NPST  
*desyoo.*  
 TENT
- B: *Ee, kyoozyuu-ni Bihoro no sigoto ga owar-eba ne*  
 yes within.today Bihoro GEN work NOM finish-COND SFP  
 (Speaker A) “‘Would you like to go up to Kotan in Kussharo? You’ve probably never been there before.” (Speaker B) “‘Sure, if I finish my work for Bihoro today.”’

- b. *Bihorotyoo de wa, myoogoniti kara, tyoosei*  
 Bihoro LOC TOP day.after.tomorrow ABL town.government  
*sikoo sanzyuusyuunen no syukuten ga*  
 establishment 30.year.anniversary GEN celebration NOM  
*moyoos-areru.*  
 hold-PASS.NPST  
 'In Bihoro, a celebration was to be held two days later to commemorate the  
 thirty-year anniversary of the town's founding.'
- c. *Onna-gaka wa, sono mati kara, wazin ga*  
 female-artist TOP that village ABL Japanese NOM  
*teizyuu-sihazime-ta koro no moyoo o panorama-huu no*  
 settle-begin-PST time GEN scenes ACC panorama-style GEN  
*e ni wakariyasuku siageru sigoto o*  
 painting LOC easily.understandable compose-NPST job ACC  
*irai-sarete-i-ta.*  
 commission-PASS-DUR-PST  
 'The female artist (Speaker B) had been commissioned by that village to  
 paint a panoramic picture that clearly depicted the period when Japanese  
 began to settle in the area.'

The deictic temporal adverb *myoogoniti* 'day after tomorrow' and the non-past form *moyoosareru* 'be held' in (52b) are based on a temporal reference point established by the utterances of the characters in (52a) and are interpreted as relative future tense.

The next passage in (53) is from the novel *Kogarashi no Niwa* 木枯しの庭 by Ayako Sono (1976). The deictic temporal adverbs *kinoo* 'yesterday' (53b) and *kyoo* 'today' (53c) are not based on actual speech time but on the time when the main character in the novel, Kumon Kenichiro, leaves his office. We can observe here the non-deictic usage of tense forms.

- (53) a. *Tatta itiniti no tigai de, daigaku no*  
 just one-day GEN difference INS university GEN  
*ityoo-namiki no moyoo ga sukkari*  
 ginkgo-row.of.trees GEN color NOM completely  
*kawatte-iru yooni Kumon Ken'itiroo wa omoi-nagara,*  
 change-DUR.NPST CMP Kumon Kenichiro TOP think-while  
*kenkyuusitu o de-ta.*  
 office ACC leave-PST  
 'Kumon Kenichiro left his office thinking to himself that the ginkgo trees  
 lining the walk at the university seemed to have completely changed their  
 color in just one day.'

- b. *Kinoo, Hosino ni a-i ni deka-ke-ta toki wa,*  
 yesterday Hoshino DAT meet-INF PURP leave-PST time TOP  
*huyu no yuugure wa toomei-ni kagayaki-watatte-i-ta.*  
 winter GEN evening TOP clearly shine-spread.across-DUR-PST  
 ‘Yesterday, when he left to meet Hoshino, the winter evening sky had been  
 shining clearly far and wide.’
- c. *Kyoo wa kumori de donyori-site-iru.*  
 today TOP cloudy COP.GER be.overcast-DUR.NPST  
 ‘Today it was cloudy, and the sky was overcast.’

The verb *donyori-site-iru* ‘be overcast’ in (53c) is interpreted not with reference to speech time but with reference to the time when the main character leaves his office, representing an example of relative present tense. In a narrative discourse such as this, such a non-past form could be replaced by the past form *donyori-site-ita* ‘was overcast’ with no change in the temporal meaning expressed.

The following passage in (54) is excerpted in simplified form from the novel *Seishun no Satetsu* 青春の蹉跎 by Tatsuzō Ishikawa (1968). The scene is of two characters, Tomiko and Kenichiro, skiing.

- (54) a. *Ima Tomiko wa kintyoo-si, osidamat-te, inoti-gake*  
 now Tomiko TOP be.tense-INF keep.silent-GER desperately  
*subette-i-ta.*  
 slide-DUR-PST  
 ‘Tomiko was now skiing down the slope desperately, her body tense and  
 her mouth shut in complete silence.’
- b. *Kenitiroo wa kanozyo no naname-usiro ni*  
 Kenichiro TOP her GEN off.to.the.side-behind LOC  
*i-te sore o mimamori-nagara ima wa kono onna*  
 exist-GER that ACC look.upon-while now TOP this woman  
*o ai-site-i-ta.*  
 ACC love-DUR-PST  
 ‘Kenitiro was off to her side behind her, and watching the whole scene  
 unfold, now was feeling love for this woman.’

In (54a) and (54b), the temporal adverb *ima* ‘now’ is used with past-tense forms of the verb, a co-occurrence of forms not found in spoken discourse.

In narrative discourse, the non-past form can frequently be seen to be used even in relating past events. In the passage in (55) below, taken from the novel *Umi to Dokuyaku* 海と毒薬 by Shūsaku Endō (1957), the habitual form in (55b) explains the sentence in (55a) in which the Kansai dialectal form *tarin no ya* ‘not be enough’ (equivalent to *tarinai no da* in standard Japanese) is used. The non-past form *tukau*

‘use’ appears here, but the temporal meaning would not change if the past form *tukatta* ‘used’ were substituted.

- (55) a. *Gabettoeki ga tar-in no ya.*  
 Gabett.solution NOM be.enough-NEG.NPST NMLZ COP.NPST  
 ‘There’s not enough Gabett solution.’
- b. *Suguro wa onazi kenkyuusei no Toda to hanasi*  
 Suguro TOP same research.student GEN Toda COM talk  
*o suru toki wa itumo kansaiben o tukau.*  
 ACC do.NPST time TOP always Kansai.dialect ACC use.NPST  
 ‘Suguro always uses Kansai dialect when he speaks with his fellow research student Toda.’
- c. *Gakusei-zidai kara itunomanika hutari no aida*  
 student-days since at.some.time.or.other the.two GEN between  
*de wa sooiu syuukan ga tukur-arete-i-ta.*  
 LOC TOP such habit NOM form-PASS-DUR-PST  
 ‘Since their student days, such a habit had been formed between them without their realizing it.’

Certain uses of the non-past form in narrative texts can be correlated with a more specific function of describing what the characters in a narrative are perceiving. The passage in (56) below is excerpted from the novel *Okuru Kotoba* 贈る言葉 by Shō Shibata (1966) and depicts a scene in which the character Mitsushi is startled by a woman’s (Yasuko) scream and looks over at her.

- (56) a. *Yoku nemutte-i-ta Mitusi wa, totuzen a to*  
 well sleep-DUR-PST Mitsushi TOP suddenly a! QUOT  
*iu Yasuko no sakebi-goe ni me-o-samasi-ta.*  
 say.NPST Yasuko GEN scream CAUS wake.up-PST  
 ‘Mitsushi, who was in a deep sleep, woke up at Yasuko’s sudden scream.’
- b. *Odoroi-te, tonari ni nete-iru Yasuko o*  
 be.startled-GER beside LOC sleep-DUR.NPST Yasuko ACC  
*nozokikomu to kurusii yume o mite-iru*  
 look.at.NPST COND painful dream ACC see-DUR.NPST  
*rasi-ku, kao o yugamete-iru.*  
 appear-INF face ACC twist-DUR.NPST  
 ‘Startled, he looked over at Yasuko sleeping beside him and saw that she appeared to be having a bad dream, her face grimacing.’

The non-past form *yugamete-iru* ‘be grimacing’ is used in (55b), but a past form could just as well be substituted with no change in the temporal meaning. Here the non-past form functions to give a vivid description of what the character is perceiving.

## 5 Summary and conclusion

We have argued in this chapter that the principal meaning function of the four primary tense and aspect forms in modern Japanese (*suru/sita*, *site-iru/site-ita*) lies not in the propositional meaning of the atomic events expressed by the clauses in which they occur, but rather in marking various kinds of connectivity in discourse among those clauses. The perfective aspectual forms *suru/sita* mark events as being temporally bounded and have a discourse function of marking sequentiality of events, while the durative aspectual forms *site-iru/site-ita* mark events as temporally unbounded and have a discourse function of marking simultaneity, or overlap, of events. In both spoken and narrative discourse, perfective aspectual forms bear the central role of ordering events in an iconic sequence, corresponding to the actual order in which those events are seen to occur in time, and to foreground that sequence of events, whether in real or fictive contexts. Durative aspectual forms, by contrast, function to background events as explanatory to or setting the stage for events that are foregrounded.

The durative aspectual forms *site-iru/site-ita* are also used to express resultative aspect, and, closely related in meaning to that, perfect aspect (to be distinguished from perfective aspect). Both resultative aspect and perfect aspect view a prior event from a reference point later in time but are distinguished in terms of whether a state arising from the prior event is seen to hold at the later reference time (resultative aspect) or whether the prior event is merely seen to be relevant in some way to the later reference time (perfect aspect). Resultative aspect is thus relatively more focused on the resulting state, whereas perfect aspect is relatively more focused on the prior event itself. In terms of discourse function, resultative aspect functions to express simultaneity of the situation it expresses with another, foregrounded event, whereas perfect aspect functions to express counter-sequentiality of events, where the order of events narrated is the reverse of the actual order in which those events are seen to occur in time.

Habitual (iterative) aspect, expressing the multiple occurrence of events, may potentially be encoded in any of the four primary tense and aspect forms in Japanese. Regardless of the particular form in which it is encoded, however, habitual aspect is fundamentally durative in character and, as such, has a discourse function of providing background information to events foregrounded in discourse.

In spoken discourse, which assumes the presence of both a speaker and listener, tense is a fundamentally deictic category that orders events and situations expressed

in linguistic form with respect to the time of speech of the speaker. In narrative discourse, by contrast, where there is no speaker or listener present, tense takes on a non-deictic function of ordering events and situations outside of the time of the act of narration. We accordingly find in narrative discourse a relaxing of certain deictic constraints observed in spoken discourse, such as that governing the co-occurrence of deictic adverbs with set tense forms. We also observe a freer variation between the (otherwise) non-past *-ru* form and the (otherwise) past *-ta* form in the narration of foregrounded events, without regard for the literal ordering of those events with respect to the time of the act of narration.

In this chapter we have observed these various discourse functions of tense and aspect at work in actual contexts of use, primarily in written narrative discourse. In the process we hope to have contributed to a better understanding, not only of the inherently discourse-oriented character of tense and aspect, but of the features that distinguish spoken from narrative discourse in Japanese, as a foundation for encouraging further work clarifying in what ways Japanese is or is not different from other languages of the world in the respects we have observed.

## Additional abbreviations

CAUS – cause, GOAL – goal, NPST – nonpast, POT – potential, TENT – tentative, TMP – temporal

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## **IV The semantics of reality**



## 9 Conditionals in Japanese

### 1 Introduction

This chapter deals with conditional sentences in standard Japanese. The main focus is on a description of the usages of conditional endings and their interaction with tense and aspect rather than on theoretical or typological aspects of conditionals. The approach is cognitive and descriptive, rather than formal, although some reference will be made to formal semantic approaches at several junctures. The chapter is organized as follows. Section 2 will give a brief introduction to the basic morphological and semantic characteristics of the four forms used to express the antecedent of a conditional in Japanese. Section 3 will propose a classification of Japanese conditionals based on the notion of ‘settledness.’ Sections 4 and 5 describe non-hypothetical uses of conditional forms, conditionals with volitional consequents, and pragmatic conditionals. Section 6 presents a summary and conclusion.

## 2 Conditional forms in Japanese

### 2.1 Morphological characteristics of conditional morphemes in Japanese

Traditional descriptive grammars of Japanese distinguish at least two verbal endings and two clitics that serve to express conditional antecedents: *-reba*, *-tara*, *to*, and *nara*.<sup>1</sup> *Nara* takes a tensed clause as a complement and can be considered a clitic on a par with *keredo* ‘though,’ *kara* ‘because,’ and *node* ‘because,’ rather than a verbal ending. I will nevertheless call the four forms ‘conditional forms,’ without distinguishing verbal endings from clitics.

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<sup>1</sup> There are also nominal forms expressing time and occasion which can be treated as conditional antecedents, e. g. *baai* ‘case,’ *sai* ‘occasion,’ *toki* ‘time,’ etc., but I do not discuss these in this chapter. See Alfonso (1966: Lesson 24), Kuno (1973: Chapters 13–15), Martin (1975: Section 9.3), and especially Nihongo Kijutsu Bunpō Kenkyūkai (2008: Chapter 4) for a general introduction to conditional forms and other forms used to express conditional meaning. Endings are written with, and clitics without, a hyphen in this chapter. The aspectual marker ‘te+i (gerund+ be)’ is analyzed as two separate items with a space in between, i.e., *-te i-*, but glossed as one item as in PRF, RES or PROG.

Not only does *nara* take predicate forms marked for past vs. non-past tense, but it also allows modal forms in the clauses it follows, although these are restricted to the two forms *yoo-da* ‘look as if ...’ and *no-da* ‘it is that ...’, as illustrated in (1).<sup>2,3</sup>

- (1) a. *Kimi ga sakini tuk-u yoo nara ...*  
 you NOM in.advance arrive-NPST appearance COP.COND  
 ‘If it looks as if you will arrive before me ...’
- b. *Kimi ga sakini tuk-u no nara ...*  
 you NOM in.advance arrive-NPST NMLZ COP.COND  
 ‘If it is that you will arrive before me ...’
- c. \**Kimi ga sakini tuk-u rasii nara ...*  
 you NOM in.advance arrive-NPST EVID COP.COND  
 ‘If it seems that you will arrive-NPST before me ...’
- d. \**Kimi ga sakini tuk-u daroo nara ...*  
 you NOM in.advance arrive-NPST TENT COP.COND  
 ‘(Lit.) If it’s probable that you will arrive before me ...’

*To* is attached only to the conclusive form of a predicate in the non-past form. Its pre-jacent clause, therefore, does not exhibit a contrast in tense.

- (2) a. *Naomi ga heya ni hair-u to Taroo ga*  
 Naomi NOM room GOAL enter-NPST COND Taro NOM  
*hon o yon-de i-ta.*  
 book ACC read-PROG-PST  
 ‘When Naomi entered the room, Taro was reading a book.’
- b. \**Naomi ga heya ni hait-ta to Taroo ga*  
 Naomi NOM room GOAL enter-PST COND Taro NOM  
*hon o yon-de i-ta.*  
 book ACC read-PROG-PST  
 ‘When Naomi entered the room, Taro was reading a book.’
- (3) a. *Hanasi ga naga-i to kiraw-are-ru yo.*  
 talk NOM be.long-NPST COND hate-PASS-NPST SFP  
 ‘(You) will be unpopular, if you talk too long.’

2 *-da* is dropped when it combines with *-nara*. *No-dat-tara* (= *no-da*+PST+*tara*) is essentially equivalent in function to *no nara*.

3 There are only two examples of *kamosirenai nara* and no examples of *nitigainai nara* in the BCCWJ (Balanced Corpus of Contemporary Written Japanese) created by The National Institute for Japanese Language and Linguistics (NINJAL), in contrast to about 1000 examples of *yoo nara* and more than 6000 of *no nara*.

- b. \**Hanasi ga naga-katta to kiraw-are-ru yo.*  
 talk NOM be.long-PST COND hate-PASS-NPST SFP  
 '(You) will be unpopular, if you talk too long.'

-*Reba* and -*tara* are suffixes attached to verbal stems, -*reba* following vowel stems and -*eba* consonant stems. Morphophonemically -*tara* behaves in the same way as the past morpheme -*ta*, with allomorphic variations depending on the verbal stem it attaches to, i. e. -*dara* for verbal endings in /g-/ , /m-/ , and /n-/ , and -*tara* otherwise.<sup>4</sup>

- (4) a. *mi-reba* < *mi-reba* ('look'-COND), *kak-eba* < *kak-reba* ('write'-COND)  
 b. *kai-tara* < *kak-tara* ('write'-COND), *kai-dara* < *kag-tara* ('smell'-COND)  
*yon-dara* < *yom-tara* ('read'-COND), *sin-dara* < *sin-tara* ('die'-COND)

For adjectives, -*kattara* and -*kereba* are attached to adjective stems and -*dattara* and -*nara* (*ba*) are attached to nouns and nominal adjective (*keiyōdōshi*) stems.<sup>5</sup>

- (5) a. *ooki-kattara* ('be.big'-COND), *ooki-kereba* ('be.big'-COND)  
 b. *isya-dat-tara* ('doctor'-COP-COND), *isya-nara* ('doctor'-COP.COND)  
 c. *kirei-dat-tara* ('pretty'-COP-COND), *kirei-nara* ('pretty'-COP.COND)

## 2.2 Temporal order of conditionals

Since -*tara* and -*reba* take a clause that is not marked for tense, the temporal information relevant to the conditional clause is in such cases determined by the predicate of the main clause. The same thing applies to *to* because it also lacks a tense contrast in the complement it takes. In *p-tara q*, *p-reba q*, and *p to q*, the event that *p* represents precedes in time the event that *q* represents. In the sentences in (6), for example, the rainfall in the antecedent clause precedes cancellation of the game in the consequent clause.<sup>6</sup>

<sup>4</sup> Historically, -*tara* likely originated in *te-ar-aba* or *te-ar-eba* (GER-exist-conditional.ending).

<sup>5</sup> *De at-tara* or *de ar-eba*, conditional forms of *de aru* (*te* form of copula+ 'be'), can be used for nouns and nominal adjectives in formal style.

<sup>6</sup> For (6b, d, f), if there is no modal such as *daroo* or *hazu-da* attached, the interpretation of the antecedent is factual rather than hypothetical. For -*tara* and *to*, the sentence means that it rained and then the game was canceled. For -*reba*, it means that every time it rained, the game was canceled. See Section 5.1 for factual uses of conditionals.

- (6) a. *Ame ga hut-tara siai wa tyuusi ni nar-u*  
 rain NOM fall-COND game TOP canceled DAT become-NPST  
*daroo.*  
 TENT  
 'If it rains, the game will be canceled.'
- b. *Ame ga hut-tara siai wa tyuusi ni nat-ta*  
 rain NOM fall-COND game TOP canceled DAT become-PST  
*daroo.*  
 TENT  
 'If it rained, the game would have been canceled.'
- c. *Ame ga hur-eba siai wa tyuusi ni nar-u*  
 rain NOM fall-COND game TOP canceled DAT become-NPST  
*daroo.*  
 TENT  
 'If it rains, the game will be canceled.'
- d. *Ame ga hur-eba siai wa tyuusi ni nat-ta*  
 rain NOM fall-COND game TOP canceled DAT become-PST  
*daroo.*  
 TENT  
 'If it had rained, the game would have been canceled.'
- e. *Ame ga huru to siai wa tyuusi ni*  
 rain NOM fall COND game TOP canceled DAT  
*nar-u daroo.*  
 become-NPST TENT  
 'If it rains, the game will be canceled.'
- f. *Ame ga huru to siai wa tyuusi ni*  
 rain NOM fall COND game TOP canceled DAT  
*nat-ta daroo.*  
 become-PST TENT  
 'If it had rained, the game would have been be canceled.'

For *-reba*, *-tara*, and *to*, the relationship between the antecedent and the consequent clause is usually interpreted as causal if the predicates of the two clauses are non-stative. This has to do with the temporal order of the constituent clauses, the event in the antecedent temporally preceding that in the consequent. Jacobsen (1990) argues that there is a temporal asymmetry between the antecedent and the consequent of conditionals, so that the reversal of the two results in a change in meaning. Truth functionally [if *p* then *q*] is equivalent to [not *p* or *q*], which is true except when *p* is true and *q* false. In particular, this should be true when *p* and *q* are both true, irrespective of

the order of *p* and *q*. For example, (7a) should be equivalent in its truth functionality to (7b), in which the order of *p* and *q* are reversed. In fact, however, these represent different states of affairs.

- (7) a. *Zisin ga okir-eba kono biru wa*  
 earthquake NOM occur-COND this building TOP  
*taore-ru daroo.*  
 collapse-NPST TENT  
 ‘If an earthquake occurs, this building will collapse.’
- b. *Kono biru ga taore-reba zisin ga*  
 this building NOM collapse-COND earthquake NOM  
*oki-ru daroo.*  
 occur-NPST TENT  
 ‘If this building collapses an earthquake will occur.’

(7b) sounds unnatural in that it presents the fall of the building as temporally preceding the earthquake, which would consequently presume the fall of the building to be the cause of the earthquake.

Abe (1991), following Smith (1983), introduces another argument against treating the meaning of conditionals as material implication. Smith points out that, based on logical rules of inference, from the negation of material implication (not [if *p* then *q*]) it is possible to deduce that [*p* and not *q*]. If conditionals in natural language were to represent material implication, we should be able to deduce (8c) from (8b), the negation of (8a), a counterintuitive and unacceptable result.

- (8) a. *If it rains, we will watch TV in the house.*  
 b. *It is not true that if it rains, we will watch TV in the house.*  
 c. *It rains.*

To remedy this unacceptable inference, Abe introduces a covert pronoun for tense to account for the temporal order existing between the antecedent and consequent clauses.

- (9) a. *If the Giants lose, my father cries.*  
 b. [if [the Giants lose[PRO<sub>x</sub>,t]] [my father cry [PRO<sub>y</sub>,t’]]]  
 c. (x)(y)(x<y) [if the Giants lose[t=x] my father cry[t’=y]]

The formula in (9) asserts that for any pair of points of time *x* and *y*, where *x* precedes *y*, it holds that if the Giants lose at *x*, then my father cries at *y*. The particular time



relationship constraining the choice of values assigned to the two variables derives also from the syntactic structure of the conditional sentence.<sup>7</sup>

- (10) a. *If it rains, we will watch TV in the house.*  
 b. [it rain( $t=PROx$ ) ... we watch( $t'=PROy$ ) TV in the house]  
 c.  $(\forall x)(\forall y)(x < y)[\text{it rain}(x) \rightarrow \text{we watch}(y) \text{ TV in the house}]$

From this, the inference from (8b) to (8c) pointed out above can be represented as in (11).

- (11) a. It is not the case that if it rains we will watch TV in the house.  
 b.  $\neg(\forall x)(\forall y)(x < y)[\text{it rain}(x) \rightarrow \text{we watch}(y) \text{ TV in the house}]$   
 c.  $(\exists x)(\exists y)(x < y) \neg[\text{it rain}(x) \rightarrow \text{we watch}(y) \text{ TV in the house}]$   
 d.  $(\exists x)(\exists y)(x < y) \neg[\neg \text{it rain}(x) \vee \text{we watch}(y) \text{ TV in the house}]$   
 e.  $(\exists x)(\exists y)(x < y)[\neg \neg \text{it rain}(x) \wedge \neg \text{we watch}(y) \text{ TV in the house}]$   
 f.  $(\exists x)(\exists y)(x < y)[\text{it rain}(x) \wedge \neg \text{we watch}(y) \text{ TV in the house}]$   
 g.  $(\exists x)[\text{it rain}(x)]$

Abe (1991: 43) states “now, (11g) does not assert that it is going to rain. It only asserts that at some time point, past or future, it rains. There is no harm in being able to conclude (11g).” Although Abe is not wrong in concluding (11g) from (11b), this still is not the conclusion that we want to draw from NOT (if p, then q). So, introducing temporal order to the meaning of material implication is not enough to remedy the treatment of conditionals in terms of material implication.<sup>8</sup>

If we map the order of the antecedent and the consequent onto temporal order, then it becomes natural to interpret conditionals as expressing a causal relation, which, I argue, is related to the bidirectional interpretation of conditionals.

Natural language conditionals are typically interpreted as bidirectional, that is, the antecedent is typically interpreted as both a sufficient and necessary condition for the consequent. The relevant inference is called an invited inference (Geis and Zwicky 1971) or conditional perfection (Herburger 2016 among others).

<sup>7</sup> Strictly speaking the precedence relation is to be defined on the two pairs of points of time expressed in the two clauses (Abe 1991: 43).

<sup>8</sup> We will discuss the proper treatment of conditional meaning in Section 3.3, where we introduce Premise Semantics based on the Ramsey test.

- (12) a. *If you mow the lawn, I'll give you \$50. (cf. Geis & Zwicky 1971)*  
 b. If and only if you mow the lawn, I'll give you \$50.
- (13) a. *If you work hard, you'll succeed.*  
 b. If and only if you work hard, you'll succeed.

The bidirectionality interpretation is pragmatic, so it can be overtly canceled, that is, it can be denied without contradiction as in (14), where *you're lucky* amounts to a denial of *you work hard*.

- (14) *If you work hard, you'll succeed. And if you're lucky, you'll succeed as well.*  
 (Herburger 2016: example (4)<sup>9</sup>)

The bidirectional interpretation is only possible when the predicate in the antecedent is non-stative. If the predicate is interpreted as representing a stative eventuality or the point in time of the event is irrelevant, then the bidirectionality interpretation may not arise. For example, (15), taken from Herburger (2016: 2), does not mean that if the relevant cactus is not an *Astrophytum*, it grows native to Idaho.

- (15) *If this cactus grows native to Idaho, then it's not an Astrophytum.*

The antecedent in (15) does not refer to a causing event for the consequent, but rather serves as a basis sufficient to draw the conclusion in the consequent.

In Japanese, such a bidirectional interpretation ('if and only if') is associated with the conditional forms *-tara*, *-reba*, and *to*, illustrated in (16), which make reference to some causal connection between the conditional constituent clauses when they represent non-stative events.<sup>10</sup>

- (16) a. *Zisin ga {oki-ru to/oki-reba/oki-tara} kono biru*  
 earthquake NOM {occur TO/-REBA/-TARA} this building  
*wa taore-ru daroo.*  
 TOP collapse-NPST TENT  
 'If an earthquake occurs, this building will collapse.'

<sup>9</sup> Notice that in Japanese this example cannot be translated with conditional forms. Concessive forms such as *temo*, which differ from conditional forms, must be used (see Section 3.4 and Takubo 2006, 2008b, 2011 for discussion).

<sup>10</sup> The use of *nara* is possible but sounds unnatural in (16), probably because *nara* is not associated with causality even with non-stative predicates.

- b. *Ame ga {hur-u to/hur-eba/hut-tara} siai wa tyuusi*  
 rain NOM {fall-NPST TO/-REBA/-TARA} game TOP canceled  
*ni nar-u daroo.*  
 DAT become-NPST TENT  
 'If it rains, the game will be canceled.'
- c. *Zyaiantu ga {make-ru to/make-reba/make-tara} otoosan*  
 Giants NOM {lose-NPST TO/-REBA/-TARA}, father  
*wa nak-u daroo.*  
 TOP cry-NPST TENT  
 'If the Giants lose, Dad will cry.'

In the case of *nara*, which exhibits a tense contrast in the antecedent clause, the interpretation of tense in the two constituents is made independently of one another. If *-tara*, *-reba* are used in the antecedent as in (17a), Saturday must be interpreted as temporally preceding Thursday, e. g. this coming Saturday vs. next Thursday.<sup>11</sup> (17b) is thus unacceptable. Such is not the case for *nara*. (18) may be interpreted as Saturday either preceding or following Thursday. Thus (18) is possible with *nara*.

- (17) a. *Taroo ga doyoobi ni it-tara, boku wa mokuyoobi*  
 Taro NOM Saturday TMP go-COND, I TOP Thursday  
*ni ik-u.*  
 TMP go-NPST  
 'If Taro goes on Saturday, I will go on Thursday.'
- b. \**Taroo ga kono doyoobi ni it-tara, boku wa*  
 Taro NOM this Saturday TMP go-COND, I TOP  
*kono mokuyoobi ni ik-u.*  
 this Thursday TMP go-NPST  
 'If Taro goes this Saturday, I will go this Thursday.'
- (18) a. *Taroo ga doyoobi ni iku nara, boku wa mokuyoobi*  
 Taro NOM Saturday TMP go COND, I TOP Thursday  
*ni ik-u.*  
 TMP go-NPST  
 'If Taro goes on Saturday, I will go on Thursday.'

<sup>11</sup> *To* cannot be used in (17a) because the main clause refers to a volitional event. See Section 4 for discussion.

- b. *Taro ga kono doyoobi ni iku nara, boku wa kono*  
 Taro NOM this Saturday TMP go COND, I TOP this  
*mokuyoobi ni ik-u.*  
 Thursday TMP go-NPST  
 'If Taro goes this Saturday, I will go this Thursday.'

It is interesting to note here that example (15), which resists bidirectional interpretation, can only be translated with *nara*, all the other conditional forms being unacceptable.

- (19) a. *Mosi kono saboten ga aidaho ni gensei-suru nara, sore*  
 if this cactus NOM Idaho LOC grow.native COND that  
*wa asutorofitumu dewa-na-i.*  
 TOP Astrophytum COP-NEG-NPST  
 'If this cactus grows native to Idaho, then it's not an Astrophytum'
- b. \**Mosi kono saboten ga aidaho ni gensei-*  
 if this cactus NOM Idaho LOC grow.native  
*{suru to/sitara/sureba}, sore wa asutorofitumu dewa-na-i.*  
 {TO/-TARA/-REBA} that TOP Astrophytum COP-NEG-NPST

The temporal interpretation becomes different when stative predicates or stative forms of predicates are used in the antecedent. The *-te i-* form of a non-stative verb can refer to an event that occurred in the past (see Takubo 2009, Jacobsen (this volume), Kudo (this volume), Matsumoto (this volume), and S. Kaufmann (this volume) for perfect and other uses of *-te i-*).

- (20) *Taroo wa kinoo koko ni ki-te i-ru.*  
 Taro TOP yesterday here GOAL come-PRF-NPST  
 'Lit. Taro has been here yesterday (Taro came here yesterday).'

Verbs in the antecedent can take the *-te i-* form in this use to refer to an event prior to the event in the consequent without depending on the time of the consequent event for its temporal interpretation. In (21) the time of the event of 'Taro having gone last Saturday' in the antecedent is determined independently of the time of the main clause event of 'Jiro having gone last Thursday.'

- (21)      *Taroo ga sensyuu no doyoobi ni it-te {i-tara/i-reba},*  
             Taro    NOM last.week GEN Saturday TMP go-PERF-COND,  
             *Ziroom wa sensyuu no mokuyooobi ni it-te i-ru*  
             Jiro    TOP last.week GEN Thursday TMP go-PERF-NPST  
             (*daroo*).  
             (TENT)  
             ‘If Taro went last Saturday, Jiro must have gone last Thursday.’

There is no causality involved in the interpretation of (21). In contrast to what we saw earlier in (16), which had to do with predicting what will follow if the antecedent is hypothesized to occur, the relevant interpretation of (21) has more to do with making an inference about what must have happened based on the assumption given in the antecedent. This difference in interpretation has to do with whether the antecedent is “settled” or not, a concept to be introduced in the next section.

### 3 The basis for classification of Japanese conditionals

In this subsection I will discuss basic interpretations of conditional sentences, focusing on interpretive possibilities related to the choice of conditional morpheme. The classification I will propose is one made on the basis of whether conditionals contribute to predictions based on causal relations or on the basis of patterns of inference, such as deduction, induction, or abduction from background assumptions (cf. Takubo 2009). Conditional morphemes can also be used to express conditions for action such as in making plans, making promises, or in exhorting (hortative meaning), which will be treated separately in Section 4. Some conditional morphemes, in particular *to* and *-tara* also have non-hypothetical uses, which will also be discussed separately in Section 5.

#### 3.1 The classification of Japanese conditionals

Dancyger (1998: chapter 2) calls those types of conditionals that involve a backshift of tense and causal relations between the antecedent and consequent, as exemplified in (22a), ‘predictive’ conditionals as opposed to those that do not.<sup>12</sup>

<sup>12</sup> See Section 5 for conditionals that do not involve causal relations.

- (22) a. *If it rains, the game will be canceled.*  
 b. *If it rained, the game would be canceled.*  
 c. *If it had rained, the game would have been canceled.*

Dancyger assumes that there is a deletion of the future auxiliary *will* in (22a) and thereby includes this example as a case of backshift. S. Kaufmann (2005a, b) argues that there is no backshift involved in sentences like (22a), drawing a parallel between ‘it rains’ in the conditional antecedent here to that used in main clauses, both referring to a future event but differing in that ‘it rains’ in main clauses is only felicitous under a special reading that incorporates an element of ‘certainty’ or ‘scheduling,’ which he calls the Certainty Condition (CC). S. Kaufmann also points out that the past form in (22b) is similar to main clause uses of ‘it rained’ in that the past form is interpreted as past, the difference being that while ‘it rained’ in main clauses indicates that the speaker knows that it rained, the speaker does not know the truth value of ‘it rained’ in (22b).<sup>13</sup> He distinguishes these two on the basis of the notion ‘settled,’ a notion originally proposed in Funk (1985). Funk distinguishes two types of uncertainty, one that is “largely due to the fact that the state-of-affairs described and predicated of does not yet exist, i. e. is still subject to manifestation (so that it cannot be affirmed or denied – it is unverifiable) at the moment of the sentence being uttered” and one for which “the state of affairs does exist at the time of speaking (either in the positive or negative sense, it is ‘manifested’ and could thus be verified), but the speaker has not got enough information (or is otherwise not disposed) to be sure about it and hence to affirm or deny it.” Accordingly, the meaning of the conditioning frame can be said to vary from ‘if it happens that ...’ to ‘if it is true that’ (Funk 1985: 375–376). S. Kaufmann called the first meaning ‘unsettled’ and the second one ‘settled.’<sup>14</sup>

Arita (2007, 2017), based on S. Kaufmann (2005a, b), argues that if (22a) does not involve backshift, there is no reason to treat (22a) as in the same category of predictive conditionals and proposes to divide Dancyger’s predictive conditionals into predictive conditionals, epistemic conditionals, and counterfactual conditionals, applying this classification in her description of Japanese.

The notion of ‘settledness’ referred to above turns out to be a highly useful one in classifying Japanese conditionals. I will demonstrate how conditionals in Japanese can

**13** S. Kaufmann (2005a: 183) uses ‘If you struck the match, it lit.’ as an example of an epistemic conditional. In Japanese, there must in this case be a modal such as *hazu-da* in the main clause to show that the conclusion is one drawn by the speaker based on the supposition in the antecedent.

**14** (i) is an example that Funk gives for the meaning ‘if it happens that ...’ and (ii) one he gives for the meaning ‘if it is true that ...’

(i) *I will be happy if we find a solution.*

(ii) *(I hope Bolton won their home match yesterday.) If they did, they still have a chance of winning the championship.*

be classified depending on the ‘settledness’ of the antecedent and the role the notion of ‘settledness’ plays in each conditional function. As background to that classification, I will introduce in the next section the notion of geometry of discourse domains.

### 3.2 Geometry of discourse domains and conditional interpretation

In Takubo (2006) and Takubo and Kinsui (1997),<sup>15</sup> we proposed a ‘geometry of discourse domains’ to account for the distribution of demonstratives and subsequently in Takubo (2006, 2008c, 2009, 2011) I applied the results of that study to modal and conditional constructions. In this section I will show how the geometry that I proposed can be used to describe and classify conditional sentences, especially in terms of their contribution to inferential mechanisms.

In Takubo (1997, 2006, 2009, 2011), I divided discourse domains into three types based on whether the propositions involved are settled or not. I first proposed a division of discourse domains into the R-domain and the I-domain, the I-domain housing unsettled propositions, i.e. propositions the truth of which is not determined, and the R-domain containing propositions that are settled. The R-domain is further subdivided into the D-domain and the R-D domain, where the D-domain houses propositions for which the truth value is known and immediately accessible to the speaker without any inferential process, and the R-D domain consists of all propositions in R excluding those in D. The propositions in R and R-D are, by definition, settled.

- (23) R-domain: settled propositions
  - D-domain: propositions known to the speaker
  - R-D domain: settled propositions, the truth value of which is not known to the speaker
  - I-domain: unsettled propositions

The domain geometry in (23) can be interpreted in terms of differing knowledge (or belief) states of the speaker.

Let us assume that a hypothetical antecedent *if p* is to be interpreted as the addition of *p* to the knowledge (or belief) state of the speaker, expressed here in terms of the various domains. The conditional sentence as a whole can be interpreted as checking whether the consequent follows from (or is compatible with when the modal involved is that of possibility) the state of the domain adjusted by the addition of the antecedent.<sup>16</sup>

<sup>15</sup> In Takubo and Kinsui (1997) we used the terms ‘determined and undetermined’ for ‘settled and unsettled’ following Fauconnier (1985), who made a similar distinction.

<sup>16</sup> This way of interpreting a conditional sentence is called the ‘Ramsey test.’ See Ramsey (1929: 247) for the original formulation of this test and Stalnaker (1968) and Lewis (1973) for how the test was interpreted or implemented.

Knowledge of a proposition in domains outside the D-domain can only be accessed by inference based on D or on information provided by the addressee. We can describe the properties of various conditionals by referring to where the antecedent and the consequent belong in the domain geometry. Note here that generic conditionals are a separate type of conditional that do not fall under this domain geometry (See Section 3.6).

If the proposition in the antecedent is not settled, that is, if  $p$  in *if*  $p$  is located in the I-domain, there are in theory the following three possibilities for interpreting the conditional sentence, depending on which domain the proposition in the consequent belongs to.

- (24) a. If  $p_I$ , then  $q_D$ .  
       b. If  $p_I$ , then  $q_{R-D}$ .  
       c. If  $p_I$ , then  $q_I$ .

(24a) and (24b) are in fact impossible because  $p_I$  represents what will happen in the future while  $q_D$  and  $q_{R-D}$  represent states of affairs that hold at the utterance time or used to hold at the utterance time.<sup>17</sup> An unsettled proposition cannot be the antecedent of a conditional that has a settled proposition as a consequent.

Let us examine cases where the antecedent  $p$  is located in the R-D domain.

- (25) a. If  $p_{R-D}$ , (then)  $q_D$ .  
       b. If  $p_{R-D}$ , (then)  $q_{R-D}$ .  
       c. If  $p_{R-D}$ , (then)  $q_I$ .

The antecedents in (25) are all hypothetical because the speaker does not know whether  $p$  or not  $p$  is true at the time of the utterance. Since  $p$  is settled, the reference is either to the past or to a present state of affairs. (25a) is possible only if  $q$  is interpreted as counterfactual and would be used to deny  $p_{R-D}$ , i. e. to assert *not*  $p_{R-D}$ . If the speaker knows that  $q$  is true, it is informationally meaningless to say *if*  $p$ , (then)  $q$ . When the speaker knows  $q$  to be false,  $p_{R-D}$  cannot be true. If  $p_{R-D}$  were true in that case, then the speaker could not assert  $q$  to be false by saying *If*  $p$ , (then)  $q$  because the conditional (25a) asserts that  $p$  is a sufficient condition for  $q$  to be true, which is in contradiction with the assumption that the speaker knows  $q$  to be false. (25a) must, therefore, be interpreted as a counterfactual conditional.

(25b) is also possible and represents cases where the speaker makes an inference about the current or past state of affairs based on the suppositional value  $p$ . (25c) is also

<sup>17</sup> This may be possible if the proposition is subject to the CC (Certainty Condition; see S. Kaufmann 2005a, b), that is, the knowledge in question represents an item scheduled for the future.



possible and represents cases where the speaker makes a prediction about a future state of affairs based on some suppositional value about the current or past state of affairs.

Let us examine next the characteristics of conditionals where the antecedent is a proposition in the D-domain. If the proposition in the antecedent of a conditional is in the D-domain, it must necessarily be counterfactual. This is so because all propositions in the D-domain have a truth value known to be true or false to the speaker by definition. By definition of the D-domain, either  $p$  in *if*  $p_D$  is in D or *not*  $p$  is in the domain. When  $p$  is in the D-domain, it means that the speaker knows that  $p$  is true. It is informationally meaningless to hypothesize what is known to be true.<sup>18</sup> When *not*  $p$  is in the D-domain, that is, if the speaker knows that  $p$  is false, the addition of  $p$  to the D-domain is meaningful and  $p$  must be interpreted as counterfactual. In this case the addition of  $p$  to the D-domain is to be interpreted as creating a new domain D' by replacing *not*  $p$  with  $p$  and making the necessary adjustments to ensure consistency.<sup>19</sup>

A counterfactual antecedent can have a consequent in any of the three domains.

- (26) a. If  $p_D$ , (then)  $q_D$ .  
       b. If  $p_D$ , (then)  $q_I$ .  
       c. If  $p_D$ , (then)  $q_{R-D}$ .

In (26),  $q$  can be interpreted either as false or true. If  $q$  is known to the speaker to be false, then it is to be interpreted as counterfactual. In that case, the conditional expresses that a counterfactual consequent follows from a counterfactual antecedent. If  $q$  is known to be true, it cannot be expressed by any of the conditional forms in Japanese. A concessive form such as *temo* must be used in such cases.<sup>20</sup> If  $q$  is in the I-domain, as in (26b), the conditional is interpreted as asserting that the counterfactual state D' is compatible with  $q$  that will happen in the future. If  $q$  is in the R-D domain, as in (26c), the conditional is interpreted to assert that a settled proposition follows from D'.

In the next section I will describe the four conditional forms in Japanese in terms of the domain geometry.

### 3.3 Predictive conditionals in Japanese

We have observed that if the antecedent is unsettled, the consequent must also be unsettled, which means that both the antecedent and the consequent refer to a future

<sup>18</sup> The reference to  $p$  in the D-domain is informationally useful if it is to be interpreted either as a reason for the consequent to hold, i. e. *p kara q* ( $q$  because  $p$ ) or a concessive that serves to negate a conditional assertion, i. e. *p noni q* ( $q$  even though  $p$ ).

<sup>19</sup> See Ramsey (1929), Sakahara (1985), and Arita (1999, 2007, 2017) for discussion.

<sup>20</sup> (26a) in this case expresses situations such that the addition of  $p$  to D as a counterfactual leads to no change in the consequent.

state of affairs. The predicate in the antecedent in such a case is usually a non-stative verb. As argued in Section 2.2. the antecedent temporally precedes the consequent in predictive conditionals and presupposes some causal relation between the antecedent and the consequent. *To*, *-tara*, and *-reba* may all be used with such a meaning. Arita (1999, 2007, 2017) argues that *nara* exhibits only a limited distribution as a marker of predictive conditionals.

- (27) *Koohii o {non-dara/nom-eba/nomu to/\*?nomu nara} yoru*  
 coffee ACC {drink-TARA/-REBA/-TO/NARA} at.night  
*nemur-e-na-ku nar-u zo.*  
 sleep-POT-NEG-INF become-NPST SFP  
 ‘If you drink coffee at night, you will become unable to sleep.’

The conditional sentences in (27) involve *p* as a hypothetical antecedent and an assertion in the consequent that follows from the addition of *p*<sup>21</sup> to the knowledge *K* of the speaker.<sup>22</sup> The speaker asserts that *q* follows from the addition of *p* to *K*, expressible as a general causal relation, such as ‘taking caffeine at late hours prevents you from going to sleep’. It is one of the characteristics of predictive conditionals that they involve an invited inference. Predictive conditionals such as (28a) therefore imply that the antecedent is not only a sufficient but also a necessary condition of the consequent, as indicated in (28b).

- (28) a. If *p<sub>i</sub>*, then *q<sub>i</sub>*  
 b. If not *p<sub>i</sub>*, then not *q<sub>i</sub>* = If *q<sub>i</sub>*, then *p<sub>i</sub>*

In example (29), the statement by A implies that taking coffee at such a late hour is the sole cause of not being able to get to sleep. Note that the addressee can deny (29A) by asserting as in (29B) that taking coffee is not the sole cause for not being able to get to sleep. The very fact that (28B) is taken to be the denial of (29A) demonstrates that speaker B interprets the statement by speaker A as a bidirectional conditional.

- (29) A: *Koohii o {non-dara/nom-eba/nom-u to} yoru*  
 coffee ACC {drink-TARA/REBA/TO} night  
*nemur-e-na-i zo.*  
 sleep-POT-NEG-NPST SFP  
 ‘If you drink coffee, you will not be able to sleep at night.’

<sup>21</sup> See Ramsey (1929) and Sakahara (1985) for this view.

<sup>22</sup> I will not take up the question here of whether the relevant background information involved is the ‘knowledge’ or ‘belief’ of the speaker.

- B: *Otoosan, matigat-te-ru. Ima huminsyoo dakara,*  
 Dad become.wrong-RES-NPST now insomnia COP-because  
*nom-ana-ku-temo nemur-e-na-i.*  
 drink-NEG-INF-even.if sleep-POT-NEG-NPST  
 ‘Dad, you’re wrong. I’ve got insomnia. So even if I don’t drink coffee, I can’t sleep.’

It is interesting to note that if the main clause predicate is changed into the past tense in such cases, the interpretation becomes different.

- (30) *Ano toki koohii o {non-dara/\*nom-eba/nom-u to} yoru*  
 that time coffee ACC {drink-TARA/-REBA/TO} night  
*nemur-e-naku nat-ta.*  
 sleep-POT-NEG-INF become-PST  
 ‘When I drank coffee at that time, I would not be able able to sleep at night.’

*Nom-eba* cannot be used in (30), and *non-dara* and *nom-u to* must be interpreted factually rather than hypothetically. The speaker drank coffee and became sleepless after doing so. This is the factual use of conditionals that will be discussed in Section 5.1. *Nom-eba* is not possible because *-reba* may not be used factually, except in special circumstances. The antecedent becomes hypothetical if modals such as *daroo* ‘would (undoubtedly have)’ or *hazu-da* ‘should (have)’ are added to the main clause, in which case the *-reba* form becomes possible and the conditional is interpreted as a counterfactual as expected: the hypothetical is added to the D-domain.<sup>23</sup>

- (31) *Ano toki koohii o {non-dara/nom-eba/nom-u to} yoru*  
 that time coffee ACC {drink-TARA/-REBA/TO} night  
*nemur-e-naku nat-ta daroo.*  
 sleep-POT-NEG-INF become-PST TENT  
 ‘If I had drunk coffee at that time, I would have been unable to sleep at night.’

Arita (1999, 2007) assumes that all predictive conditional forms are tenseless. She argues, therefore, that *nara*, when it exhibits a tense contrast, cannot be used to mark the antecedent of a predictive conditional (see (27) above). It is difficult to tell whether the examples that she gives for *nara* are in fact not examples of predictive condition-

<sup>23</sup> Adding a modal adverb such as *kitto* (certainly) and a sentence final particle *yo* can impose a hypothetical interpretation on (30): *Ano toki koohii o nondara kitto nemure naku natta yo* ‘If I drank coffee at that time, I would certainly have become unable to sleep.’

als where both the antecedent and the consequent refer to propositions in the I-domain as in (32). As is the case with (32), the economy going up again can well be taken to be the cause of individual consumption going up.

- (32) a. *Keiki ga kaihuku su-ru nara kozin syoohi*  
 economy NOM recover do-NPST NARA individual spending  
*wa nobi-ru daroo.*  
 TOP increase-NPST TENT  
 'If the economy recovers, individual consumption will undoubtedly increase.'
- b. *Keiki ga kaihuku {si-tara/su-reba/su-ru to} kozin*  
 economy NOM recover {do-TARA/REBA/TO} individual  
*syoohi wa nobi-ru daroo.*  
 spending TOP increase-NPST TENT  
 'If the economy recovers, individual consumption will undoubtedly increase.'

When the main clause predicate is in the past form, however, *nara*, on the one hand, and the three other conditional forms, on the other, behave very differently.

- (33) a. \**Keiki ga kaihuku su-ru nara kozin syoohi*  
 economy NOM recover do-NPST NARA individual spending  
*wa nobi-ta daroo.*  
 TOP increase-PST TENT  
 'Lit. If the economy recovers, individual consumption would have increased.'
- b. *Keiki ga kaihuku {si-tara/su-reba/su-ru to} kozin*  
 economy NOM recover {do-TARA/REBA/TO} individual  
*syoohi wa nobi-ta daroo.*  
 spending TOP increase-PST TENT  
 'If the economy had recovered, individual consumption would have increased.'

As observed by Arita (1999: 85) (33a) is unacceptable, while (33b) is acceptable. Predicates to which *-reba*, *-tara*, and *to* attach get their temporal interpretation from the tense of the main clause predicate, so the event of the economy recovering in the antecedent is understood to take place before individual spending increases. In contrast, the temporal interpretation of the predicate of the clause that *nara* takes is made independently of the tense of the main clause predicate. One might argue that (33a) is judged unacceptable because the antecedent represents a future event and the consequent a past event: a future event cannot cause a past event, leading to the unac-

ceptability of (33a). Indeed, if the temporal order is corrected the sentence becomes acceptable, as in (34).

- (34) a. *Keiki ga kaihuku si-ta nara kozin syoohi*  
 economy NOM recover do-PST NARA individual spending  
*wa nobi-ru daroo.*  
 TOP increase-NPST TENT  
 ‘If the economy has recovered, individual consumption will undoubtedly increase.’
- b. *Keiki ga kaihuku su-ru nara kozin syoohi*  
 economy NOM recover do-NPST NARA individual spending  
*wa nobi-ru daroo.*  
 TOP increase-NPST TENT  
 ‘If the economy recovers, individual consumption will undoubtedly increase.’

This, however, may not be entirely correct. Notice that (33b) must be interpreted as counterfactual.<sup>24</sup> The scope of the past tense and the modal for (33b) is as in (35). The temporal ordering of the event of individual spending growing is located prior to the utterance time (UT) and the event of economy recovering is located prior to the event of individual spending growing:  $x < y < UT$ .

- (35) *[Keiki ga kaihuku {si-tara/sur-eba/suru to} kozin syoohi wa nobi]-ta daroo.*  
 $(\forall x)(\forall y)(x < y)[\text{economy recover}(x) \rightarrow \text{individual spending grow}(y)] \wedge y < UT$

The two events in the antecedent and the consequent are taken to be two consecutive events that could have taken place prior to the utterance time. The temporal ordering of the events dictates that the relevant propositions are settled, which means that they are either in the R-D domain or in the D-domain. The aspectual characteristics of the verbs here suggest that they most probably refer to propositions in the D-domain. If the verbs indicated a state of affairs holding at the present time, that is, if the relevant proposition were in the R-D domain, they would take a stative or perfect form such as *V-te i* (see Section 3.3 and Takubo (1993, 2006, 2008a), S. Kaufmann (this volume), Jacobsen (this volume), Kudo (this volume) for discussion).<sup>25</sup> Given that the antecedent is interpreted as a counterfactual, the scope relations between tense and the modal in (33b) are as in (36).

<sup>24</sup> For *-tara* and *to*, factual interpretation would also be possible if *daroo* is removed. (cf. Section 4).

<sup>25</sup> Although somewhat difficult, the sentence in (35) can also be interpreted as referring to propositions in the R-D domain, that is, states of affairs that hold at the utterance time but of which the speaker does not know the truth value.

- (36) [[*Keiki ga kaihuku {si-tara/su-reba/su-ru to} kozin*  
 economy NOM recover {do-TARA/-REBA/-TO} individual  
*syoochi wa nobi]-ta]* *daroo*.  
 spending TOP increase-PST TENT  
 'If the economy had recovered, individual consumption would have increased.'

For the *nara* conditional, by contrast, as we have already discussed, the tense of the past form of the verb antecedent is interpreted independently from the tense of the main clause:  $ta_1$  is not in the scope of  $ta_2$ .

- (37) a. *Keiki ga kaihuku si-ta nara kozin syoochi*  
 economy NOM recover do-PST NARA individual spending  
*wa nobi-ta daroo*.  
 TOP increase-PST TENT
- b. \*[[*Keiki ga kaihuku si-ta<sub>1</sub> nara kozin syoochi wa nobi]-ta<sub>2</sub>* *daroo*.

More importantly, unlike other conditional forms, with the *nara* conditional the suppositional modal *daroo* does not include the antecedent in its scope. The relevant scope relation here is as in (38).

- (38) [[*Keiki ga kaihuku si]-ta<sub>1</sub>]* *nara* [[[*kozin syoochi wa nobi]-ta<sub>2</sub>]* *daroo*]

The antecedent in (38), therefore, is interpreted not as counterfactual, but as information that the speaker learned either from others or on his own:  $p$  is classified as  $p_{R,D}$ .<sup>26</sup> The scope property of *daroo* with respect to the antecedent clause suggests that the antecedents in (33a), (34a), and (37a) are not in the scope of *daroo* either, in which case the proposition in the antecedents cannot be interpreted to be in the I-domain. The reason that (33a) is unacceptable, therefore, is not because it resists a causal interpretation due to a mismatch in the temporal order of the antecedent and the consequent, but rather because a nonpast settled proposition is to be interpreted as subject to the Certainty Condition, so from it a past proposition cannot be inferred. In fact, Arita (2007, 2017) proposes that except for some uses of *-ta nara* which allow a tenseless interpretation, *nara* is basically interpreted as being attached to propositions in the R-D domain, which she calls an epistemic interpretation, based on S. Kaufmann (2005a, b).<sup>26</sup>

<sup>26</sup> Arita (1999: 86) observes that *ame ga hutta* 'it rains' in (i) can be interpreted as representing a future (unsettled) proposition, and considers it to be a predictive conditional when that is the case.

- (i) *Asu ame ga hut-ta nara, siai wa tyuusi ni nar-u daroo*.  
 tomorrow rain NOM fall-PST NARA, game TOP canceled DAT become-NPST TENT  
 'If it rains tomorrow, the game will be canceled.'

In the next section, I will discuss cases of epistemic conditionals, that is, cases where the antecedent is *if*  $p_{R-D}$ .

### 3.4 Epistemic conditionals

Epistemic conditionals refer to those conditionals in which the antecedent expresses a state of affairs that is settled but the truth of which is not known to the speaker. The proposition ‘it rains tomorrow’ in (39a), for example, is about what will happen in the future, so that it is neither settled nor verifiable at the time of the utterance. ‘She is in the lobby’ in (39b) and ‘Mary said she liked the movie’ in (39c), on the other hand, are either true or false at the time of the utterance.

- (39) a. *If it rains tomorrow, the game will be canceled.*  
       b. *If she is in the lobby, the plane arrived yesterday.*  
       c. *If Mary said she liked the movie, she was just showing off.*

The proposition in the antecedent of epistemic conditionals is in the R-D domain, which means that the proposition in question already has a truth value determined, so that it is, so to speak, a part of reality, even though the speaker does not know its truth value. The conditional antecedent, therefore, does not function to add its proposition to the R-D domain but rather to hypothetically assign a truth value to it and to conjecture about a conclusion to be drawn from it or a course of action to be taken based on it. Information about the proposition can be obtained by inference based on the speaker’s knowledge, observation, hearsay, or information offered by the addressee. Any of *-reba*, *-tara*, and *nara* may be used in the antecedent of an epistemic conditional, but *to* may not.

- (40) a. Context: according to the schedule, Taro is attending a conference at MIT.  
       *Taroo ga MIT no kaigi ni {de-te i-ru*  
       Taro NOM MIT GEN conference DAT {attend-RES-NPST  
       *nara/de-te i-tara/de-te i-reba} ...*  
       NARA/-TARA/-REBA}  
       ‘If Taro is attending a conference at MIT ...’  
       b. Context: I see Taro’s car in the parking lot.  
       *Taroo ga {ki-te i-ru nara/i-tara/i-reba}...*  
       Taro NOM {come-RES-NPST NARA/-TARA/-REBA}  
       ‘If Taro is already here ...’  
       c. Context: John has told me that Taro is here.  
       *Taroo ga {ki-te i-ru nara/#i-reba/#i-tara}*  
       Taro NOM {come-RES-NPST NARA/-REBA/-TARA}  
       ‘If Taro is already here ...’

As shown in (40c) *-reba* and *-tara* may not be used for hearsay or information obtained from the addressee (we will return to this point below in connection with example (53)).

To indicate that a proposition in question is in the R-D-domain, the proposition must be settled, referring to an event that either holds at the time of utterance or occurred in the past. As we have seen in Section 2, there is no tense contrast with *-reba* or *-tara*, any past or perfect marking being added by the attachment of *-te i-* to the verbal stem. *-Te i-* can be interpreted as progressive when attached to activity verbs such as *yom-u* ‘read,’ *aruk-u* ‘walk,’ or *mi-ru* ‘watch’ or as a resulting state when attached to change of state verbs, such as *oti-ru* ‘fall,’ *taore-ru* ‘collapse,’ *sin-u* ‘die,’ or *ik-u* ‘go to.’<sup>27</sup> The perfect interpretation of *-te i-* is available for all non-stative verbs (Takubo 2008a, Matsumoto (this volume), Kudo (this volume)). The nonpast form *-te i-ru* can thus be used to refer to an ongoing activity, or a resulting state holding at the time of utterance or an event that took place in the past.

- (41) *Taroo wa hon o yon-de i-ru.* (progressive)  
 Taro TOP book ACC read-PROG-NPST  
 ‘Taro is reading a book.’
- (42) *Taroo wa eki ni tui-te i-ru.* (resulting state)  
 Taro TOP station GOAL arrive-RES-NPST  
 ‘Taro has arrived at the station (and is now there).’
- (43) *Taroo wa sannen mae ni kono hon o*  
 Taro TOP three.years before TMP this book ACC  
*yon-de i-ru.* (perfect)  
 read-PRF-NPST  
 ‘Lit. Taro has read this book three years ago.’
- (44) *Taroo wa mikka mae no sanzi ni*  
 Taro TOP three.days before GEN three.o’clock TMP  
*kono eki ni tui-te i-ru.* (perfect)  
 this station GOAL arrive-PRF-NPST  
 ‘Lit. Taro has arrived at this station three days ago at 3:00. (He arrived at this station three days ago at 3:00.)’

<sup>27</sup> Note that in Japanese, *ik-u* ‘go’ and *ku-ru* ‘come’ are verbs that denote a change of state, in particular a change in location. *It-te i-ru* and *ki-te i-ru* therefore do not express a progressive going or coming, but rather a resulting state where the subject has reached the goal indicated. In the same manner, *sin-de i-ru*, the *-te i-ru* form of *sin-u* ‘die’ means not that the subject is dying but that the subject is dead.



Predicates that *-reba* and *-tara* attach to can, in turn, take the *-te i-* form to express an ongoing action, a resulting state, or perfect meaning. The *-te i-* form can thus be used before *-tara* and *-reba* to form a conditional antecedent clause indicating ongoing events, a resulting state holding at the time of utterance, or an event that occurred at a time prior to the utterance time or the reference time.

- (45) (Mosi) *Taroo ga ima hon o {yon-de*  
 if Taro NOM now book ACC {read-TE  
*i-tara/i-reba*}, ... (progressive)  
*I-TARA/-REBA*  
 ‘If Taro is reading a book now ...’
- (46) (Mosi) *Taroo ga kinoo kono hon o*  
 if Taro NOM yesterday this book ACC  
*{yon-de i-tara/i-reba}*, ... (perfect)  
*{read-TE I-TARA/-REBA}*, ...  
 ‘If Taro read this book yesterday ...’
- (47) (Mosi) *Taroo ga eki ni {tui-te*  
 if Taro NOM station GOAL {arrive-TE  
*i-tara/i-reba*}, ... (resulting state)  
*I-TARA/-REBA*  
 ‘If Taro has already arrived at the station (and is there now)...’
- (48) (Mosi) *Taroo ga kinoo kono eki ni*  
 if Taro NOM yesterday this station GOAL  
*{tui-te i-tara/i-reba}*, ... (perfect)  
*{arrive-TE I-TARA/-REBA}*  
 ‘If Taro arrived at this station yesterday ...’

In contrast, both *-te i-* and tense marking co-occur with *nara*, yielding four different patterns, each with a different meaning: *-ru nara/-ta nara/-te i-ru nara/-te i-ta nara*.

Epistemic conditionals are used to make a conjecture based on information that the speaker has obtained about the R-D domain. As described in Section 3.2, the consequent *q* can be of type  $q_I$  (49a),  $q_{R-D}$  (49b), or  $q_D$  (49c).

- (49) a. *Taroo ga kite {i-na-i nara /i-na-kattara/i-na-kereba}*,  
 Taro NOM come-TE {I-NEG-NPST NARA /-NEG-TARA/-NEG-REBA}  
*kaigi wa hirak-e-na-i kamosirenai*.  
 meeting TOP hold-POT-NEG-NPST maybe  
 ‘If Taro has not arrived, it may not be possible to hold the meeting.’

- b. *Taroo ga kite {i-na-i nara /i-na-kattara/i-na-kereba},*  
 Taro NOM {come-TE I-NEG-NPST NARA /NEG-TARA/NEG-REBA}  
*kaigi wa hirak-e-te i-na-i kamosirenai.*  
 meeting TOP hold-POT-TE I-NEG-NPST maybe  
 ‘If Taro has not arrived, it may be that the meeting has not been able to be held.’
- c. *Taroo ga kite {i-na-i nara /i-na-kattara/i-na-kereba},*  
 Taro NOM {come-TE I-NEG-NPST NARA /NEG-TARA/NEG-REBA}  
*kaigi wa hirak-e-na-katta kamosirenai.*  
 meeting TOP hold-POT-NEG-PST maybe  
 ‘If Taro has not arrived, the meeting might not have been able to be held.’ OR  
 ‘If Taro had not arrived, the meeting might not have been able to be held.’

In (49a) a prediction is made based on a presumption about the current state of affairs. In (49b), a presumption about the current state of affairs is made based on a presumption about the current state of affairs. In (49c), as pointed out in Section 3.2, since *q* is in the D-domain, the consequent must be counterfactual. The antecedent *p* in (49c) is more naturally interpreted as counterfactual, but an R-D interpretation is also possible,<sup>28</sup> in which case the sentence is used to show that the falsity of the consequent suggests the falsity of the antecedent, namely Taro must not be here, an interpretation that is nevertheless distinct from the counterfactual interpretation. (50) can be interpreted either as (50a) or (50b).

- (50) *Kinoo Taroo ga ki-te {i-ta nara /i-tara/i-reba},*  
 yesterday Taro NOM come-TE {I-PST NARA /-TARA/-REBA}  
*kono rizikai ni syusseki si-te i-ru hazu*  
 this board.meeting DAT attend do-TE I-NPST should  
*da.*  
 COP.NPST
- a. ‘(I don’t know if Taro came yesterday, but) if he did, he had to have attended this board meeting. (Since he didn’t attend this board meeting, he couldn’t have arrived yesterday.)’
- b. ‘Taro didn’t come yesterday. If he had, he had to have attended this board meeting.’

The antecedent in (49) and (50) is thus ambiguous between an epistemic and counterfactual interpretation.

<sup>28</sup> The R-D interpretation is forced if *no nara* is substituted for *nara*. See footnote 26.

Since the presumption in the antecedent is about the current state of affairs or about what happened in the past with this type of conditional, its presumed truth value has to be conjectured by some means, such as a surmise by the speaker, an inference based on the speaker's knowledge, an observation (as in (51)), or hearsay or information offered by the addressee.

- (51) a. Context: there are large rain clouds over the Tokyo area.  
*Mosi Tookyoo ni ame ga hut-te i-reba, siai wa*  
 If Tokyo LOC rain NOM fall-PROG-REBA game TOP  
*tyuusi ni nat-te i-ru hazu-da.*  
 canceled DAT become-TE I-NPST expectation-COP.NPST  
 'If it is raining in Tokyo, the game should have been canceled.'
- b. Context: Taro's car is in the parking lot.  
*Taroo wa kaet-te ki-te i-ru yoo-da.*  
 Taro TOP return-GER come-RES-NPST appearance-COP.NPST  
 'It looks like Taro is back.'
- c. *Kare ga {kaet-te i-ru nara /i-tara/i-reba}, moosugu*  
 he NOM {return-RES-NPST NARA /-TARA/-REBA}, soon  
*koko ni ku-ru daroo.*  
 here GOAL come-NPST TENT  
 'If he is back (lit., has returned), he will undoubtedly come here soon.'

*-Reba* and *-tara* can only be used when the antecedent is based on the speaker's own surmise. They cannot naturally be used when the information on which the presumption is based is hearsay.

- (52) *Tookyoo wa ame ga hut-te i-ru sooda. Mosi ame*  
 Tokyo TOP rain NOM fall-PROG-NPST EVID if rain  
*ga {hut-te i-ru nara/??i-tara/??i-reba}, siai wa tyuusi*  
 NOM {fall-PROG-NPST NARA/-TARA/-REBA} game TOP canceled  
*ni nat-te i-ru daroo.*  
 DAT become-RES-NPST TENT  
 'I hear it is raining in Tokyo. If it is, the game has undoubtedly been canceled.'

*-Reba* and *-tara* become completely unacceptable when the information in question has been offered by the addressee, as observed by Akatsuka (1985) and Arita (1999). (53) is from Akatsuka (1985: 629), slightly revised.

- (53) A: *Boku huyu no LSA ni ik-u kotonisi-ta yo.*  
 I winter GEN LSA GOAL go-NPST decide-PST SFP  
 'I have decided to attend the Winter LSA.'
- B: *(\*Mosi) kimi ga {ik-u no nara/\*it-tara/\*ik-eba},*  
 if you NOM {go-NPST NMLZ NARA/-TARA/-REBA}  
*boku mo ik-u yo.*  
 I also go-NPST SFP  
 'If you are going, I am going too.'

Note that the decision to attend LSA in the winter has already been announced and has become known to B, but the conditional *no nara* form is used instead of *kara*.<sup>29</sup> Akatsuka (ibid.) observes that *no nara* is most naturally used immediately after A's announcement has been made. If the conversation between A and B has already ended, B cannot use *no nara* but must instead use the *kara* 'because' form, which takes a true proposition. Akatsuka (ibid.) observes that *no nara* must be used for epistemic information that has been newly acquired (NAI: Newly Acquired Information), showing unexpectedness and surprise.<sup>30</sup> She situates the information type of NAI between Realis and Irrealis (hypothetical) on a scale of epistemic stance (Akatsuka 1985: 636).<sup>31</sup>

An important thing to note about the sentence to which *nara* attaches is that when it refers to a future event, it has to be interpreted as part of a fixed schedule. *-Tara* or *-reba* cannot be used in this case.

- (54) a. *Asita paatii ga ar-u rasii. Asita paatii ga*  
 tomorrow party NOM be-NPST EVID tomorrow party NOM  
*ar-u nara, kimono o ki-yoo.*  
 be-NPST NARA kimono ACC wear-VOL  
 'It seems there'll be a party tomorrow. If there is, I'll wear my kimono (to it).'
- b. *Asita ame ga hur-u rasii. Asita ame ga*  
 tomorrow rain NOM fall-NPST EVID tomorrow rain NOM  
*hur-u nara siai wa tyuusi ni nar-u daroo.*  
 fall-NPST NARA game TOP canceled DAT become-NPST TENT  
 'It seems that it will rain tomorrow. If it rains, the game will undoubtedly be canceled.'

<sup>29</sup> *Nara* is also possible. *Nara* can in some cases be used for predictive conditionals but *no nara* is only possible for epistemic conditionals. See Arita (1999, 2009, 2017) for the differences between *nara* and *no nara*.

<sup>30</sup> DeLancy (2001) relates Akatsuka's observation to mirativity.

<sup>31</sup> Takubo and Kinsui (1997) makes a similar observation with a different phenomenon, i. e. introduction of a person to the addressee.

- c. *Yoteihyoo ni yoru-to asita kaiin sookai*  
 schedule DAT be.based.on-COND tomorrow member assembly  
*ga ar-u. Kaiin sookai ga ar-u nara,*  
 NOM be-NPST member assembly NOM be-NPST NARA  
*syussekiya no meibo ga ir-u.*  
 attendees GEN list NOM need-NPST  
 ‘According to the schedule, there will be a general assembly of the members tomorrow. If there is, we (will) need a list of those attending.’

### 3.5 Counterfactual interpretation of conditionals

This section discusses counterfactual conditionals in Japanese. Japanese does not have dedicated conditional forms to express counterfactual meaning. For a conditional antecedent *p* to be interpreted as counterfactual, it has to be established that *p* is false in the actual world and it is known both to the addressee and the speaker that it is false. Of the four conditional forms, *to* and *nara* are marginal with counterfactuals. The antecedent *p* in *p to* may be in the R-D domain but never in the D-domain. (55a) is an epistemic and (55b) a counterfactual conditional. *To* is possible in (55a) but not in (55b).

- (55) a. Context: I don’t know if Tanaka is back, but ...  
*Mosi Tanaka ga {kaet-tei i-ru nara/i-tara/i-reba /iru to},*  
 if Tanaka NOM {return-RES-NPST NARA/-TARA/-REBA/TO}  
*komat-ta koto ni nar-u daroo.*  
 become.in.trouble-PST thing DAT become-NPST TENT  
 ‘If Tanaka is back (lit. has returned), we will be in trouble.’
- b. Context: Tanaka is not back yet, but ...  
*Mosi Tanaka ga {kaet-tei i-ru nara/i-tara/i-reba /#iru to},*  
 if Tanaka NOM {return-RES-NPST NARA/-TARA/-REBA/TO}  
*komat-ta koto ni nat-ta daroo.*  
 become.in.trouble-PST thing DAT become-PST TENT  
 ‘If Tanaka had been back, we would have been in trouble.’

Predicates to which *-tara* and *-reba* are attached are not overtly marked for tense, so to mark settledness, stative or perfect *-te i-* forms are used.

- (56) a. *Tanaka ga i-tara/i-reba, komat-ta koto*  
 Tanaka NOM be-TARA/be-REBA become.in.trouble-PST thing  
*ni nat-te i-ta daroo.*  
 DAT become-RES-PST TENT  
 ‘If Tanaka were here, we would have been in trouble.’

- b. *Kono kusuri o non-de i-tara /i-reba, sin-de i-ta*  
 this medicine ACC take-TE I-TARA /-REBA, die-RES-PST  
*daroo.*  
 TENT  
 'If he had taken this medicine, he would have died.'

As we saw in Section 2, the antecedent is ordered prior to the consequent when *-reba*, *-tara*, and *to* are attached to nonstative verbs. The presence of the past form in the main clause predicate can consequently cause the antecedent with such conditionals to be interpreted as *settled*. If the speaker knows the antecedent to be false, the conditional can be interpreted as counterfactual.

- (57) a. Context: an earthquake did not occur.  
*(Mosi) zisin ga oki-tara/-reba, kono biru wa*  
 if earthquake NOM occur-TARA/-REBA this building TOP  
*taore-ta daroo ne.*  
 collapse-PST TENT SFP  
 'If an earthquake occurred, this building would have collapsed.'
- b. Context: he did not take this medicine.  
*(Mosi) kono kusuri o non-dara, sin-da daroo ne.*  
 if this medicine ACC take-TARA die-PST TENT SFP  
 'If he had taken this medicine, he would have died.'

The examples in (57) are vague between an epistemic and counterfactual interpretation. The counterfactual interpretation needs some contextualization and the use of the *-te i-* form is preferred in both the antecedent and the consequent to obtain the counterfactual interpretation.

Another way of giving a counterfactual interpretation to conditionals is with the use of *noni*, a subordinating conjunction expressing counter-expectedness. When used after a conditional sentence, the main clause with this conjunction necessarily expresses the negation of both the antecedent and consequent propositions, as in (58).

- (58) a. *Paatii ni ki-tara Mary ni a-e-ru noni*  
 party GOAL come-TARA Mary DAT meet-POT-NPST but  
*(paatii ni) ko-na-kereba a-e-na-i.*  
 party GOAL come-NEG-COND meet-POT-NEG-NPST  
 'If you came to the party, you could meet Mary, but you cannot because (lit., if) you won't.'

- b. *Paatii ni ki-tara Mary ni a-e-ta noni*  
 party GOAL come-COND Mary DAT meet-POT-PST but  
*ko-na-katta kara a-e-na-katta.*  
 come-NEG-PAST because meet-POT-NEG-PST  
 'If you had come to the party, you could have met Mary, but you couldn't  
 because you didn't.'

The addition of *-noni* serves to deny the antecedent *paatii ni kuru* 'come to the party' (=p) and the consequent *Mary ni aeru* 'can meet Mary' (=q), leading to 'not p and not q.'<sup>32</sup> The part after *noni* can be deleted with the result forming an optative or wish type conditional such as (59).

- (59) a. *Hane ga at-tara ton-de ik-e-ru noni*  
 wing NOM have-COND fly-GER go-POT-NPST but  
 'I could fly there if I had wings.'
- b. *Hane ga at-tara ton-de ik-e-ta noni.*  
 wing NOM have-COND fly-GER go-POT-PST but  
 'I could have flown there if I had had wings.'

This construction cannot be used for a consequent that is not desirable.

- (60) a. *??Paatii ni ko-na-kattara Mary ni a-e-na-katta*  
 party GOAL come-NEG-COND Mary DAT meet-POT-NEG-PST  
*noni.*  
 but  
 'If you had not come to the party, you could not have met Mary.'
- b. *Paatii ni ko-na-kattara Mary ni a-e-na-katta*  
 party GOAL come-NEG-COND Mary DAT meet-POT-NEG-PST  
*daroo.*  
 TENT  
 'If you had not come to the party, you could not have met Mary.'

This distribution can be explained by the fact that the *noni* counterfactual is derived from the deletion of a clause after *noni*. *Noni* cannot be used for (60a) because the consequent clause of the prejaent conditional does not express something that is naturally understood as something one would wish for. The fact that *noni* requires the consequent of its prejaent conditional to express something one would wish for can be seen in the contrast between (61a) and (61b).

<sup>32</sup> See Akatsuka (1985).

- (61) a. ??*Paatii ni ko-na-kattara Mary ni a-e-na-katta*  
 party GOAL come-NEG-COND Mary DAT meet-POT-NEG-PST  
*noni (paatii ni ki-ta kara kanozyo ni*  
 but party GOAL come-PST because she DAT  
*a-e-ta).*  
 meet-POT-PST  
 ‘If you had not come to the party, you couldn’t have met Mary (, but since you did, you could meet her.)’
- b. *Paatii ni ki-tara Mary ni a-e-ta noni*  
 party GOAL come-COND Mary DAT meet-POT-PST but  
*(paatii ni ko-na-katta kara kanozyo ni*  
 party GOAL come-NEG-PST because she DAT  
*a-e-na-katta).*  
 meet-POT-NEG-PST  
 ‘If you had come to the party, you could have met Mary (, but since you didn’t you couldn’t meet her.)’

Yet another way to express counterfactuality is with the use of *tokoro-da*, consisting of a formal noun meaning ‘location’ followed by the copula. *Tokoro-da* is used to express an ongoing activity when attached to *-te i-ru*, disambiguating the polysemy that would otherwise be present with *-te i-ru*. As we saw in Section 2, if *-te i-ru* is added to an activity verb such as *yom-u* ‘read,’ the resultant form *yon-de i-ru* can be interpreted as either progressive or experiential in meaning.

- (62) a. *Watasi wa Chomsky o yon-de i-ru.*  
 I TOP Chomsky ACC read-PROG/PRF-NPST  
 ‘I am reading Chomsky.’ OR  
 ‘I have the experience of reading Chomsky.’
- b. *Watasi wa ima Chomsky o yon-de i-ru.*  
 I TOP now Chomsky ACC read-PROG-NPST  
 ‘I am now reading Chomsky.’
- c. *Watasi wa yonenmae ni Chomsky o yon-de i-ru.*  
 I TOP four.years.ago TMP Chomsky ACC read-PRF-NPST  
 ‘Lit. I (have) read Chomsky four years ago.’

When *-te i-ru* is attached to a change of state verb, by contrast, it can be interpreted as either resulting state or experiential in meaning.



- (63) *Hito ga sin-de i-ru.*  
 person NOM die-RES/PRF-NPST  
 ‘Someone is dead.’ OR  
 ‘Someone died (at an indicated time in the past).’

If we add *tokoro-da* to *yon-de i-ru* the resultant form *yon-de i-ru tokoro-da* can only be interpreted as progressive, and the experiential interpretation is lost. *Tokoro-da* cannot be attached to a change of state verb such as *sin-u* ‘die.’ *Sin-de i-ru tokoro-da*, for example, is uninterpretable unless *sin-u* is understood to mean ‘pretend to die,’ as in a play, rather than ‘die’ in the actual sense.

Now, although neither *kyonen yon-de i-ru tokoro-da* nor *sin-de i-ru tokoro-da* can be interpreted temporally, they can be interpreted modally. When interpreted modally, they always require a conditional antecedent, so that *tokoro-da* can only appear in the modal slot of the consequent clause of a conditional. It behaves differently in this respect from epistemic modals such as *daroo* or *hazu-da*, which can be used without a conditional antecedent. When *tokoro-da* is used in a conditional in this way, the resulting conditional can only be interpreted counterfactually.

- (64) a. *Clark wa sin-de i-ru*  
 Clark TOP die-RES-NPST  
 {*\*tokoro-da/daroo/hazu-da*}.  
 {*TOKORO-COP.NPST/TENT/expectation-COP.NPST*}.  
 ‘Clark *\*would/is* undoubtedly/should be dead.’
- b. *Kono kusuri o non-de i-tara Clark wa sin-de i-ta*  
 this medicine ACC take-TE I-TARA Clark TOP die-TE I-PST  
 {*tokoro-da/daroo/hazu-da*}.  
 {*TOKORO-COP.NPST/TENT/expectation-COP.NPST*}  
 ‘If he took this medicine, Clark would/would undoubtedly/should have been dead.’

(64b) must be interpreted as a counterfactual and cannot be used in a context where the speaker does not know if the antecedent is true or not.

- (65) a. Context: I don’t know whether Clark took this medicine or not.  
*Clark ga kono kusuri o non-de i-tara, sin-de*  
 Clark NOM this medicine ACC take-TE I-COND die-TE  
*i-ta {#tokoro-da/daroo/hazu-da}.*  
*I-PST {TOKORO-COP.NPST/TENT/expectation-COP.NPST}.*  
 ‘If he took this medicine, Clark *\*would/would* undoubtedly/should have been dead.’

- b. Context: I know that Clark did not take this medicine.

*Clark ga kono kusuri o non-de i-tara sin-de*  
 Clark NOM this medicine ACC take-TE I-COND die-TE  
*i-ta {tokoro-da/daroo/hazu-da}.*

*I-PST {TOKORO-COP.NPST/TENT/expectation-COP.NPST}*

‘If he had taken this medicine, Clark would/would undoubtedly/should have been dead.’

The speaker must, in other words, be one hundred percent sure that the consequent is false in order to be able to use a *tokoro-da* conditional. A consequence of this is that modal adverbs like *tabun* ‘probably’ or *osoraku* ‘maybe,’ which can cooccur with *hazu-da* or *daroo*, cannot be used with *tokoro-da*. Likewise, the interpretation *sin-dei-ru*<sub>R-D</sub>, which is possible with *hazu-da* or *daroo*, is impossible with *tokoro-da*.

- (66) *Clark ga kono kusuri o non-de i-reba, tabun*  
 Clark NOM this medicine ACC take-TE I-COND probably  
*sin-de i-ru {#tokoro-da/daroo/hazu-da}.*  
 die-TE I-NPST {TOKORO-COP.NPST/TENT/expectation-COP.NPST}  
 ‘Lit. If he had taken this medicine, Clark probably would/should be dead.’

In Takubo (2006, 2008a, 2011, 2018), I argued that *tokoro-da* is attached to a clause that denotes a d-proposition, a proposition in the D-domain which the speaker knows to be true (or false). In the case of a conditional sentence, *p-reba q tokoro-da*, *q* in the consequent must denote a d-proposition by lexical property of *tokoro-da*. If *q* is known to be true, there is no informational value in hypothetically introducing a proposition *p* by *p-reba* because the conditional is true irrespective of the truth value of *p*.<sup>33</sup> If *not p* is known to be true, *p-reba* ‘if *p*’ must be interpreted counterfactually, which means that adding *p* to the D-domain results in a contradiction, which must be avoided for consistency. Adding the counterfactual premise *p*, therefore, serves to take *not p* out of the D-domain and replace it with *p* to make possible a consistent counterfactual domain D’. If the consequent *q* is known to be true, the counterfactual antecedent *p* does not contribute any information, unless interpreted concessively, in which case a concessive form such as *temo* must be used, as *p reba* cannot be used in a concessive sense. As shown in (67), *hazu-da* or *daroo* may be used in concessives but not *tokoro-da*.

<sup>33</sup> Stating that *q* is true irrespective of the truth value of *p* explicitly has an informational value. Or stating that *p* is the cause of *q* has an informational value. A concessive form such *p temo* or *not p temo* (*q* (whether *p* or not *p*) is used for the former and a causal form such as *p kara q noda* (*q* is the case because *p* is the case) is used for the latter.

- (67) *Kono kusuri o nom-ana-ku-temo, sin-de i-ru*  
 this medicine ACC take-NEG-INF-even.if die-TE I-NPST  
*{daroo/hazu-da/ \*tokoro-da}.*  
*{TENT/expectation-COP.NPST/ TOKORO-COP.NPST}*  
 ‘Even if he had not taken this medicine, he would undoubtedly/should/  
 would be dead.’

Thus, if *tokoro-da* is attached to the consequent of a conditional when *q* is known to be true, the conditional antecedent *p-reba* cannot be interpreted in a hypothetical or counterfactual sense. *P-reba q tokoro-da* can, therefore, be interpreted meaningfully as a counterfactual only when both the antecedent and consequent are known to be false, that is, only if both *not p* and *not q* are known to be true.<sup>34</sup>

### 3.6 Generic conditionals

Conditionals used in inferences may be generic or non-generic, generic conditionals being concerned with knowledge of the world in general. Such conditionals typically serve as the major premise in inferences of the type illustrated in (68), which can be schematized as in (69).

- (68) a. *Kooteibuai ga sagar-eba, keiki*  
 official.discount.rate NOM go.down-COND economy  
*ga yokunar-u.* [Major premise]  
 NOM become.good-NPST  
 ‘If the official discount rate goes down, the economy improves.’
- b. *Kootei-buai ga sagat-ta.* [Minor premise]  
 official.discount.rate NOM go.down-PST  
 ‘The official discount rate went down.’
- c. *Zyaa keiki ga yokunar-u daroo.* [Conclusion]  
 well.then economy NOM become.good-NPST TENT  
 ‘Well then, the economy will improve.’
- (69) a. If *p* then *q* Major premise  
 b. *p* Minor premise  
 c. *q* Conclusion

<sup>34</sup> See Takubo (2011) for details and Takubo (2018) for a discussion of the lexical property of *tokoro-da* that forces a counterfactual interpretation when it is used in conditional constructions.

Generic conditionals are generic statements about the relationship between two general states of affairs and can be interpreted as universally quantified conditional statements. They are usually simple in form, unaccompanied by suppositional modals that indicate deductive or inductive reasoning such as *daroo* or *hazu-da* of the sort commonly found, sometimes covertly, in non-generic conditionals. The relationship existing between the antecedent and consequent events in such conditionals is causal in most cases, but does not have to be, as long as the events in question have a relationship of co-occurrence that is general enough to allow the inference to work. *-Reba* is commonly characterized as the morpheme typically used in the antecedent of a generic conditional, but *-tara* and *-to* may also be used in a similar way, as in (70a). In contrast, *-nara* may not generally be used to mark the antecedent of a generic conditional, as seen in (70b).<sup>35</sup>

- (70) a. *En ga agar-u {to/-reba/-tara} keiki ga*  
 yen NOM rise.NPST {TO/-REBA/-TARA} economy NOM  
*warukunar-u.*  
 become.bad-NPST  
 'If the yen rises, the economy slows down.'
- b. \**En ga agaru nara keiki ga warukunar-u.*  
 yen NOM rise NARA economy NOM bad.become-NPST  
 'If the yen rises, the economy slows down.'

## 4 Conditioned action

Another type of conditional is where the consequent clause expresses an action of the speaker or addressee contingent on the situation expressed in the antecedent. For antecedents marked by *-to*, the consequent must be an event or eventuality expressed as a declarative statement, and cannot be in the volitive, hortative, or imperative form (Alfonso 1966: 652), but other conditional forms allow such forms to be used in the consequent clause.

- (71) a. *Tanaka ga {tui-tara/\*tuk-u to} deka-ke-yoo.*  
 Tanaka NOM {arrive-TARA/arrive-NPST TO} go.out-VOL  
 'Let's go out when Tanaka arrives.'

<sup>35</sup> Arita (2017: 13) gives an example of *nara* used as a generic conditional, noting that it is a case of *nara* taking a non-tensed clause. Such use of *nara* as a generic conditional is quite rare and exceptional.

- b. *Tanaka ga {tui-tara/\*tuk-u to} syuppatu-si-ro*  
 Tanaka NOM {arrive-TARA/arrive-NPST TO} depart-do-IMP  
 ‘Leave when Tanaka arrives.’
- (72) a. *Zikan ga ar-u {nara/\*to} sanpo-si-yoo.*  
 time NOM have-NPST {NARA/TO} walk-do-VOL  
 ‘Let’s take a walk if you have the time.’
- b. *Kibidango o kure-ru {nara/\*to} otomo-si-yoo.*  
 millet.dumpling ACC give.me-NPST {NARA/TO} go.with-do-VOL  
 ‘I’ll go with you, if you give me some millet dumplings.’

The permissive forms *temo ii/temo kamawanai* can be interpreted as volitive (see M. Kaufmann and Tamura (this volume)) and as such preclude *to* marking on the antecedent.

- (73) *Kimi ga ik-e-na-i {nara/\*to} kawarini it-temo*  
 you NOM go-POT-NEG-NPST {NARA/TO} instead go-even.if  
*i-i yo.*  
 be.good-NPST SFP  
 ‘If you can’t go, I can go instead.’

When *temo ii/temo kamawanai* are used to express possibility rather than permission, however, the use of *to* on the antecedent is acceptable.

- (74) *Kono kaado ga ar-u to ansinsi-temo i-i.*  
 this card NOM have-NPST TO be.assured-even.if be.good-NPST  
 ‘You can rest assured if you have this credit card.’

## 5 Non-hypothetical uses of conditional forms

In this section I will discuss conditionals that do not involve causality: factual conditionals and pragmatic conditionals.

### 5.1 Factual conditionals

Factual conditionals refer to those conditionals in which the antecedent represents a factual rather than a hypothetical statement. As can be seen in (75) and (76), *-tara* and *to* are able to be used in this way. (75) can be interpreted as ‘we will depart when

Tanaka arrives,' in a situation where the speaker knows for a fact that Tanaka will arrive in the near future; it could, for example, be preceded by a statement such as 'Tanaka is coming at three.' -*Reba*, by contrast, cannot be interpreted in such a factual way, its natural interpretation being 'let us depart if Tanaka arrives (at three)' with the presupposition that the speaker is not certain that Tanaka will arrive (at three).

(75) Context: the speaker knows that Tanaka is arriving at three.

- a. *Tanaka ga ki-tara syuppatu su-ru zo.*  
 Tanaka NOM come-COND leave do-NPST SFP  
 'We will leave when Tanaka comes.'
- b. *#Tanaka ga ku-reba syuppatu su-ru zo.*  
 Tanaka NOM come-COND leave do-NPST SFP  
 'We will leave when Tanaka comes.'

(76) Context: A is asking directions from B to the post office.

- A: *Yuubinkyoku wa doko ni ar-imas-u ka.*  
 post.office TOP where LOC be-POL-NPST Q  
 'Where is the post office?'
- B: *Ano kado o migi ni {magaru to/magat-tara/#magar-eba}*  
 that corner ACC right GOAL {turn TO/-TARA/#-REBA}  
*migigawa ni ar-imas-u.*  
 right.side LOC be-POL-NPST  
 'If you turn right at that corner it will be on your right-hand side.'

(75) is ambiguous between a factual and hypothetical reading. This can be disambiguated by attaching *mosi*, forcing a hypothetical reading. (76), on the other hand, which allows only a factual reading does not co-occur with *mosi*.

- (77) *Mosi Tanaka ga ki-tara syuppatu su-ru.*  
 if Tanaka NOM come-TARA depart do-NPST  
 'We will depart if Tanaka comes.'

- (78) *#Mosi ano kado o migi ni magaru to/magat-tara*  
 if that corner ACC right GOAL turn TO/turn-TARA  
*migi ni ar-imas-u.*  
 right.side LOC be-POL-NPST  
 'If you turn right at that corner, it will be on your right-hand side.'

Unlike predictive conditionals and other hypothetical conditional types, illustrated in (79), conditionals used in this factual way, such as in (80), are not accompanied

by an invited inference. (75a), similarly, is a suggestion by the speaker to depart when Tanaka comes, namely at three, and not if he comes. It carries no implication that if Tanaka does not come, the interlocutors are not leaving. Likewise, (76B) does not imply that if the addressee doesn't turn the corner, she won't find a post office.

- (79) *Koohii o non-dara nemur-e-na-i.*  
 coffee ACC drink-TARA sleep-POT-NEG-NPST  
 'You cannot sleep if you drink coffee'  
 → *Koohii o nom-ana-kattara nemur-e-ru.*  
 coffee ACC drink-NEG-TARA sleep-POT-NPST  
 → 'You can sleep if you don't drink coffee'
- (80) *#Ano kado o {magaru to/magat-tara} ar-u.* → *Ano*  
 that corner ACC {turn TO/turn-TARA} be-NPST that  
*kado o magar-{anai to/anakat-tara} na-i.*  
 corner ACC turn-{NEG TO/NEG-TARA} be.NEG-NPST  
 'There is one if you turn at that corner.' → 'There isn't one if you don't turn  
 (at that corner).'

As to why conditional forms are used to refer to factual events and how they differ from other forms such as *toki* 'when' clauses, Arita (2017) proposes that in the factual use of *-tara* and *to*, there is some time *t'* prior to the utterance time, at which the proposition *p* in the antecedent was not included in the D-domain, that is, was *p<sub>t'</sub>*. In our terms, the proposition is at one point added to the I-domain as a hypothetical antecedent, and then, at a later time, is verified to have been incorporated into the D-domain. In other words, Arita's proposal can be understood to mean that the speaker presupposes a hypothetical conditional such as (81a) and the factual version of the conditional as in (81b) expresses the actual verification of that conditional.

- (81) a. *Itumo koohii o non-dara nemur-e-na-i.*  
 always coffee ACC drink-COND sleep-POT-NEG-NPST  
 'I can't go to sleep if I drink coffee.'
- b. *Kyoo mo koohii o non-dara nemur-e-na-katta.*  
 today also coffee ACC drink-COND sleep-POT-NEG-PST  
 'Today again I couldn't sleep, when I drank coffee.'

Although plausible, her proposal is not able to account for the fact that factual conditional forms can be used out of the blue, without making reference to any presupposed hypothetical conditionals, as in (82). (82) can mean that I read this book and found out the truth, where *zizitu ga wakatta* 'found out the truth' is interpreted to be true in the real world. There is no requirement that a conditional be presupposed in

order to utter such sentences.<sup>36</sup> We must therefore attribute the factual use of *-tara* and *to* to their lexical properties.

- (82) *Kono hon o {yon-dara/yomu to} zizitu ga wakat-ta.*  
 this book ACC {read-TARA/read TO} truth NOM find.out-PST  
 'I found out the truth when I read this book.'

## 5.2 Pragmatic conditionals

There are conditionals which do not involve causal relations between the premise and the consequent such as (83).

- (83) If you are a policeman, I am the King of China. (Akatsuka and  
 Tsubomoto (1998: 34))<sup>37</sup>

(83) is used to show that the addressee's claim to be a policeman is absurd. The sentence is truth functionally true only if the antecedent is false. Since the speaker knows that the consequent is false, the antecedent must be false for the sentence to be true. This sentence, therefore, is a typical case of conditionals used truth functionally. (83) is an epistemic conditional, so there need be no causal connection between the antecedent and the consequent. Only *nara* can be used in this case because the antecedent is information offered by, or framed as offered by, the addressee.

- (84) *Anta ga keikan nara boku wa tyuugoku no oosama*  
 you NOM policeman NARA I TOP China GEN king  
*da.*  
 COP.NPST  
 'If you are a policeman, I am the king of China.'

Another type of pragmatic conditional is illustrated in the examples in (85). This type is sometimes referred to as a biscuit conditional because of a famous example similar to (85) given by Austin (1961) to illustrate this type of conditional.

<sup>36</sup> Kuno (1973) observes that the consequent of factual conditionals expresses an event that is not under the control of the speaker (or, in some cases, the subject entity of the antecedent) and is therefore a source of surprise to the speaker (or subject entity of the antecedent). See Jacobsen (1990) for an account of this phenomenon in terms of his view of the cognitive foundations of conditional meaning.

<sup>37</sup> Akatsuka calls this type of conditional a *hiyuteki jōkenbun* 'metaphorical conditional' and uses it to argue against the truth functional view of conditionals (Akatsuka and Tsubomoto 1998: Part 1, section 2.4.3).



- (85) a. *Nodo ga kawai-te i-ru nara, reizooko ni*  
 throat NOM become.dry-RES-NPST COND refrigerator LOC  
*biiru ar-u yo.*  
 beer be-NPST SFP  
 ‘If you’re thirsty, there is beer in the fridge.’
- b. *Onaka ga sui-te i-ru nara, reizooko ni*  
 stomach NOM become.empty-RES-NPST COND refrigerator LOC  
*bisuketto ga ar-u yo.*  
 biscuit NOM be-NPST SFP  
 ‘If you’re hungry, there are biscuits in the fridge.’

(85) is another kind of epistemic conditional where the consequent is true irrespective of the truth value of the antecedent. But unlike (83), these conditionals are not used to show that the antecedent is false. Sakahara (1985: chapter 4) calls such sentences ‘pseudo-conditionals,’ observing that they do not allow invited inferences and that their contraposition is not equivalent to the original conditional in truth value: (86a) is not equivalent to (86b).

- (86) (a) *Onaka ga sui-te i-ru nara, reizooko ni bisuketto ga aru*  
 ‘If you’re hungry, there are biscuits in the refrigerator.’
- (b) *Bisuketto ga nai nara, onaka ga sui-te inai.*  
 ‘If there aren’t biscuits in the refrigerator, you’re not hungry.’

Sakahara furthermore claims that the consequent of a pseudo-conditional is not a real consequent, but rather an instruction or reason for arriving at the implicit but real consequent.

- (87) *Onaka ga sui-te i-ru nara, reizooko ni*  
 stomach NOM become.empty-RES-NPST COND refrigerator LOC  
*bisuketto ga ar-u kara, sore o tabe-nasai.*  
 biscuit NOM be-NPST because that ACC eat-IMP  
 ‘There are biscuits in the refrigerator, so have them if you’re hungry.’

Pragmatic conditionals do not presuppose any causal relationship between the antecedent and the consequent.

## 6 Summary and conclusion

This chapter has presented a description of the four conditional forms in Japanese. Three of these, *-reba*, *-tara*, and *to*, are used primarily in predictive conditionals, where the predicates involved are non-stative. *Nara* is used in predictive conditionals only when it takes the past form of a non-stative verb, in which case there is no tense contrast.<sup>38</sup>

*Nara*, when it exhibits a contrast in tense, has an epistemic conditional character. *-Tara* and *-reba* are epistemic in character when they follow a stative predicate or the *-te i-* form of a predicate. *To*, by contrast, cannot be used in epistemic conditionals. When the antecedent is based on information offered by the addressee, or framed as if offered by the addressee, only *nara* may be used. The forms used to express counterfactual conditional meaning are primarily *-reba* and *-tara*, and *nara* to a much more limited extent. *-Tara*, *-reba*, and *nara*, but not *to*, may be used for conditioned action. *-Tara* and *to* have factual uses, which *nara* does not have, and *-reba* has to only a very limited extent.

The analysis I have provided of these four forms relies fundamentally on the notion of settledness as defined by S. Kaufmann (2005a, b). As a descriptive device to relate this notion to the mechanisms of inference involved in conditional reasoning and discourse management, I introduced a geometry of discourse domains that is fundamentally organized around the notion of settledness. Based on this, it becomes possible to classify conditionals in terms of where in the various domains of this geometry the antecedent and consequent of a conditional are located, thereby accounting for the various interpretations the conditional may receive. Antecedents of predictive conditionals are in the I-domain (where the truth value of propositions is unsettled), those of epistemic conditionals are in the R-D-domain (where the truth values of propositions are settled but not known to the speaker), and those of counterfactual conditionals are in the D-domain (where the truth values of propositions are settled and known to the speaker). The way in which antecedents are added to the relevant domain differs in each case. For predictive conditionals, propositions in the antecedent are added to the I-domain. For epistemic conditionals, propositions in the antecedent are assigned a presumed truth value. For counterfactual conditionals, the proposition in the antecedent replaces an existing proposition with a reversed truth value in the D-domain. The function of the consequent is also different. Predictive conditionals presuppose a general knowledge of causality and present the conditional as the realization of a causal relationship, usually inducing an invited inference. Epistemic conditionals offer a speculation about the current state of affairs based on some information about the present or the past. Counterfactual conditionals

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<sup>38</sup> The past form in such cases can be seen to mark epistemic distance so that a hypothetical interpretation results. See Takubo (2008b, 2018) and the references therein for this type of past form.

posit a counterfactual situation by replacing a true proposition with a counterfactual one in the antecedent and supposing from that a situation in the consequent that is consistent with the newly created situation.

In this chapter, I have been able to touch on concessive and reason clauses only sporadically. In the native tradition of Japanese linguistics, reason clauses are treated on a par with conditional sentences, largely because the inflectional system of pre-modern Japanese treated these forms as belonging to the same category. As is well known, *-ba* in premodern Japanese was used for marking the antecedent of both conditional and reason clauses, expressing reason when affixed to the *izen* ‘perfect’ form and conditional meaning when affixed to the *mizen* ‘irrealis’ form of a predicate.<sup>39</sup> Although *ba* is not used for concessives in premodern Japanese, in the dialects of Miyako Ryukyuan, concessive meaning is one of the meanings associated with the *mizen* form + *ba*, suggesting the possibility that *ba* had expressed concessive meaning in proto-Japonic and that all these meanings are therefore related historically. For modern Japanese as well, a relationship between reason clauses and conditional clauses has been proposed in works such as Sakahara (1985), who argues that reason clauses can be seen to function as the realization of the minor premise of an inference, and Maeda (1993, 1996), who proposes subsuming conditionals, concessives, and reason clauses all under a common semantic category of *ronribun* ‘logical sentences.’<sup>40</sup> Another promising approach for finding a common semantic-pragmatic basis to all these meanings is to search for a discourse basis for the operation of inference and argumentation in natural language, as proposed in the framework of Discourse Management Theory (Takubo 1993, 2006, 2008a, 2011, 2018, Takubo and Kinsui 1997, Takubo and Sasaguri 2002). Despite the already long and multifaceted history of research on conditionals, then, it is clear that many avenues of research on conditionals still remain to be explored in the future. As we have seen in this chapter, the well-developed grammar of conditionals in Japanese offers particularly fertile ground to inform this research, not only within Japanese but cross-linguistically. It is hoped that the particular observations and analyses presented in this chapter will both contribute to and spur on further efforts toward a deeper understanding of this most fascinating area of interface between natural language, logical inference, and human cognition.

<sup>39</sup> See Sakakura (1975, 1993) for the history of conditional forms in Japanese.

<sup>40</sup> See also Takubo (2006, 2008b, 2011, 2018) and Takubo and Sasaguri (2002) and the references therein for discussion on the relationship among conditionals, reason clauses, and concessives.

## Acknowledgements

I would like to thank Stefan Kaufman for his insightful comments, Emi Mukai for her editorial support, and Wesley Jacobsen for his comments and help in improving the style of this chapter. This research on which this paper is based is supported by a JSPS grant, grant number 17K02699.

## Additional abbreviations

GOAL – goal, NPST – nonpast, POT – potential, TENT – tentative, TMP – temporal

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# 10 Negation

## 1 Introduction

This chapter takes up two topics related to negation in Japanese, negative polarity items (NPIs) and the scope of negation. The foundational work on English polarity items pioneered by Klima (1964) has motivated in-depth, ongoing research on the behavior exhibited by polarity items in Japanese. Although a number of linguistic forms in Japanese are licensed in negative contexts, and thus appear to minimally qualify as negative polarity items (NPIs), these do not exhibit many of the properties that characterize NPIs in other languages, belonging to a particular subcategory of NPIs that are known as strong NPIs. In Section 3, we will provide an overview of the main properties of NPIs in Japanese and review the claim that some forms that have been assumed to be NPIs in Japanese are in fact not NPIs, but rather so-called negative concord items.

The other topic forming the focus of this chapter is the scope of negation, a field of study inspired by the work of S. Kuno (1980, 1983). S. Kuno put forward the hypothesis that negation in Japanese is particularly narrow in scope, a hypothesis that many have seen as unintuitive and has been widely challenged. In Section 4 we will review this hypothesis and show that if we take into account how alternatives to a focused phrase are computed, semantically and pragmatically, an account of the scope of negation that is considerably simpler and more unified than that of S. Kuno becomes possible.

In Section 2 immediately following below, we will first consider basic properties of negation in Japanese, setting the foundation for our discussion of negative polarity items in Section 3 and the scope of negation in Section 4. In Section 5, the concluding section, we will consider the relationship between metalinguistic negation and focus alternatives in Japanese.

## 2 Negation and indeterminates with *mo* or *ka*

In this section, we will first survey the relationship between negation and quantification in subsection 2.1, and then consider in more detail the relationship between indeterminates with *mo* and negation in subsection 2.2.



## 2.1 Negation and quantification

Quantified expressions in Japanese are typically formed from indeterminate pronouns (henceforth, indeterminates) such as *dare* ‘who’ and *nani* ‘what’ to which particles such as *mo* (often glossed as ‘also’ or ‘even’) and *ka* (often glossed as ‘or’) are attached.<sup>1,2</sup> When the indeterminate *nani-mo* is associated with nominative, accusative, or dative case, it can only occur in contexts of sentential negation, as shown in (1) and (2).

- (1) a. \**Nani-mo oti-ta.*  
           what-MO fall-PST  
       b. *Nani-mo oti-na-katta.*  
           what-MO fall-NEG-PST  
           ‘Nothing fell down.’
- (2) a. \**Ken wa nani-mo tabe-ta.*  
           Ken TOP what-MO eat-PST  
       b. *Ken wa nani-mo tabe-na-katta.*  
           Ken TOP what-MO eat-NEG-PST  
           ‘Ken ate nothing.’

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1 We use the term “indeterminate” in this chapter in a sense identical to that of “*wh* word,” the term used for indeterminates in the early literature on Japanese interrogatives and quantification.

2 Indeterminates with *mo* or *ka* may occur with bare nouns restricting their denotation, as shown in (i) and (ii).

- (i) *Gakusei ga dare-mo ko-na-katta.*  
       student NOM who-MO come-NEG-PST  
       ‘No student came.’
- (ii) *Gakusei ga dare-ka ki-ta.*  
       Student NOM who-KA come-PST  
       ‘Some student came.’

Bare nouns themselves may be interpreted as having a group reading, a definite/indefinite reading, an existential reading, or a generic reading, depending on context. As for the semantics of bare nouns in Japanese, see Shirai (1985), Nakanishi (2007), and Izumi (2016).

When *nani-mo* is associated with cases other than nominative, accusative, or dative ones, it need not be licensed by negation, as exemplified in (3).<sup>3, 4</sup>

- (3) a. *Ken wa nani kara-mo nige-tei-ru.*  
 Ken TOP what from-MO flee-PROG-NPST  
 ‘Ken is fleeing from everything.’  
 b. *Ken wa nani kara mo nige-tei-na-i.*  
 Ken NOM what from-MO flee-PROG-NEG-NPST  
 ‘Ken is not fleeing from anything.’

The indeterminate *dare-mo* behaves exactly as *nani-mo* does in these respects, as shown in (4).

- (4) a. *\*Dare-mo utat-ta.*  
 who-MO sing-PST  
 ‘Everyone sang.’  
 b. *Dare-mo utaw-ana-katta.*  
 who-MO sing-NEG-PST  
 ‘No one sang.’  
 c. *\*Ken wa dare-mo ais-ita.*  
 Ken TOP who-MO love-PST  
 ‘Ken loved everyone.’  
 d. *Ken wa dare-mo ais-ana-katta.*  
 Ken TOP who-MO love-NEG-PST  
 ‘Ken loved no one.’  
 e. *Ken wa dare kara-mo ais-are-ta.*  
 Ken TOP who from-MO love-PASS-PST  
 ‘Ken was loved by anyone.’  
 f. *Ken wa dare kara-mo ais-are-na-katta.*  
 Ken TOP who from-MO love-PASS-NEG-PST  
 ‘Ken was not loved by anyone.’

<sup>3</sup> In Japanese postpositions such as *kara* (“from”) are used as case markers.

<sup>4</sup> *Nani yori-mo* is unnatural with a negative marker, as shown in (i).

- (i) ??*Kono iwa wa nani yori-mo omoku-na-i.*  
 this rock TOP what than-MO be.heavy-NEG-NPST  
 ‘This rock is not heavier than anything’

This is due to the fact that comparative constructions of the form *A-ga B-yori C* (“A is more C than B”) are typically unnatural in negative contexts in Japanese (see McGloin 1976 for related issues).

*Dare-mo* associated with nominative, accusative, or dative case typically cannot be used without a negative marker, as exemplified in (4a) and (4c). However, when *dare-mo* is followed overtly by the nominative case marker *ga*, it can appear in affirmative contexts as well as negative ones, as shown in (5).

- (5) a. *Dare-mo ga utat-ta.*  
           who-MO NOM sing-PST  
           ‘Everyone sang.’  
       b. *Dare-mo ga utaw-ana-katta.*  
           who-MO NOM sing-NEG-PST  
           ‘No one sang.’

The same applies to (6), where an accusative case marker *o* intervenes between *dare* and *mo* (see, for example, Hasegawa 1991 for more about indeterminates with case markers such as *o*).

- (6) a. *Ken wa dare o-mo aisi-tei-ru.*  
           Ken TOP who ACC-MO love-STAT-NPST  
           ‘Ken loves everyone.’  
       b. *Ken wa dare o-mo aisi-tei-na-i.*  
           Ken TOP who ACC-MO love-STAT-NEG-NPST  
           ‘Ken loves no one.’

*Nani* ‘what’ behaves differently from *dare* ‘who’ in this respect. Compare (5) and (6) to the examples with *nani* in (7) and (8). As shown in (7) and (8), the presence of an overt nominative case marker *ga* or accusative marker *o* does not enhance the acceptability of sentences with *nani*.<sup>5</sup>

- (7) a. *\*Nani-mo ga oti-ta.*  
           what-MO NOM fall-PST  
       b. *\*Nani-mo ga oti-na-katta.*  
           what-MO NOM fall-NEG-PST

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5 When emphasis is added to *nani-mo* by the attachment of *ka-mo*, it can be used without a negative marker, as shown in (i).

- (i) *Nani-mo ka-mo oti-ta.*  
       what-MO that-MO fall-PST  
       ‘Everything fell down.’

- (8) a. \**Ken wa nani o-mo tabe-ta.*  
           Ken TOP what ACC-MO eat-PST
- b. \**Ken wa nani o-mo tabe-na-katta.*  
           Ken TOP what ACC-MO eat-NEG-PST

*Doko e/ni-mo* ‘where + GOAL + *mo*’ also must be licensed by negation (see McGloin 1976), as seen in (9).

- (9) a. *Ken wa kinoo doko e-mo ika-na-katta.*  
           Ken TOP yesterday where GOAL-MO go-NEG-PST  
           ‘Ken did not go anywhere yesterday.’
- b. ?? *Ken wa kinoo doko e-mo it-ta.*  
           Ken TOP yesterday where GOAL-MO go-PST

Other indeterminates with *mo*, such as *dore-mo* (‘which-MO’), *dotira-mo* (‘both-MO’), *doko-mo* (‘where-MO’) and *dono-N-mo* (‘which-N-MO’), which all tend to be D-linked (discourse-linked), need not be licensed by negation (see McGloin 1976).

- (10) a. *Resutoran wa doko-mo kon-dei-ru.*  
           restaurant TOP where-MO become.congested-RES-NPST  
           ‘The restaurants are all congested.’
- b. *Resutoran wa doko-mo kon-dei-na-i.*  
           restaurant TOP where-MO become.congested-RES-NEG-NPST  
           ‘No restaurant is congested.’

It has been widely assumed in the literature that indeterminates with *mo* or *ka* form quantified expressions, and that indeterminates with *ka* have existential force. As for indeterminates with *mo*, broadly speaking, two principal approaches have been proposed to account for them in the literature.

- (11) *Ken wa nani-mo tabe-na-katta.* (*NEG >∃ or ∇>NEG*)  
       Ken TOP what-MO eat-NEG-PST  
       ‘Ken ate nothing.’

In one approach, *nani-mo* in (11) has existential force and a scope that is narrower than negation (*NEG >∃*) (Kato 1985, Kawashima 1994, Kishimoto 2008, Oda 2012, Mohri 2017). In the other, *nani-mo* in (11) has universal force and a scope that is wider than negation (*∇ > NEG*) (Nishigauchi 1986, 1990, Shimoyama 2006, 2008, Yatsushiro 2009, among others. See also Yamashina and Tancredi 2005). The focus of discussion has often been on which of these two approaches should be taken, but it should

be noted that yet another approach may be possible. Gunji (2006) points out that there are cases in which indeterminates with *mo* need not be licensed by negation, as shown in (12) (see also Shimoyama 2011 and Yabushita 2012).

- (12) *Hito wa dare-mo zibun ni ama-i.*  
 human TOP who-MO self DAT be.lenient-NPST  
 ‘Everyone (anyone) is lenient on herself.’  
 (Yabushita 2012: 438, gloss and translation by Yabushita)

Crucial to the interpretation of (12) is that the universal force of *dare-mo* is associated with a falling melody (i.e, a high pitch accent on the first mora: DAre-mo). Based on observations of the Kanto-dialect, Gunji claims that indeterminates with *mo* may have either a falling or rising melody (i.e, a high pitch accent on the second and third moras: daRE-MO),<sup>6</sup> and argues that when *dare-mo* has a falling melody, it is a positive polarity item with universal force, whereas when it has a rising melody, it is a negative polarity item with existential force (for related discussion, see Deguchi and Kitagawa 2002, Ishihara 2003, Kuroda 2005 and Kitagawa 2005).<sup>7</sup> For more on the scope of negation, see Section 4.1.

In contrast to indeterminates with *mo*, those with *ka* typically appear in positive contexts, as seen in (13).

<sup>6</sup> According to Gunji (2006), some speakers use a flat melody instead of a rising melody for indeterminates with *mo*.

<sup>7</sup> Prosody also plays an important role in the semantics of indeterminates. Gunji (2006: 28) concludes:

- (a) NPI ‘daRE ...’ has no prosodic emphasis, and corresponds to an existential quantifier. The scope of the existential quantifier corresponds to the range of the high pitch in a sentence.  
 (b) PPI ‘DAre ...’ has a prosodic emphasis, and corresponds to a universal quantifier with wide scope.

As for (b), Gunji remarks that exactly how wide the scope is is yet unclear and thus left for future research. (c) illustrates (a), and (d) illustrates (b).

- (c) *Naomi wa daRE GA ZESSAN-SI-TA SYOOSSETU NI-MO KOOHUN-SI-NA-katta.*  
 Naomi TOP who NOM praise-do-PST novel DAT-MO become.excited-do-NEG-PST  
 ‘There was no x such that y was a novel, x praised y and Naomi was excited with y.’  
 $\neg \exists x \exists y [(novel(y) \wedge \text{praise}(x, y)) \wedge \text{excited}(\text{Naomi}, y)]$   
 (Gunji 2006: 28)
- (d) *Naomi wa DAre ga zessan-sita syoosetu NI-mo koohun-si-na-katta.*  
 ‘For every x, y, if y was a novel and x praised y, Naomi was not excited with it.’  
 $\forall x \forall y [(novel(y) \wedge \text{praise}(x, y)) \rightarrow \neg \text{excited}(\text{naomi}, y)]$  (Gunji 2006: 28)

- (13) *Dare-ka (ga) ki-ta.*  
 who-KA (NOM) come-PST  
 ‘Someone came.’

When indeterminates with *ka* are used in contexts of negation, negation can only take narrower scope than the existential quantifier, as shown in (14), and these have thus often been regarded as positive polarity items (PPIs).<sup>8</sup>

- (14) *Taroo ga dare-ka o/?dare-ka syootai-si-na-katta.* ( $\exists > \text{NEG}$ ,  $*\text{NEG} > \exists$ )  
 Taro NOM who-KA ACC/who-KA invite-do-NEG-PST  
 ‘Taro did not invite someone.’

However, there are also cases in which negation takes wider scope than indeterminates with *ka* as the existential quantifier, as shown in (15) and (16). (15) is an example containing an emotive-factive predicate, *odoroki-da* ‘surprise-be,’ and (16) is an example containing the antecedent of a conditional.<sup>9</sup>

- (15) *Ken ga nani-ka iw-ana-katta to wa odoroki-da.*  
 Ken NOM what-KA say-NEG-PST QUOT TOP surprise-COP.NPST  
 ( $\text{NEG} > \exists$ )  
 ‘(I) am surprised that Ken did not say something.’  
 (Yoshimoto 2014: 115, translation by Yoshimoto)

- (16) *Dare-ka ko-na-i to, Zyon o*  
 who-KA come-NEG-NPST COND John ACC  
*yob-anakutewanaranai.* ( $\text{NEG} > \exists$ )  
 call-must  
 ‘If someone does not come, we have to get John.’  
 (Hasegawa 1991: 272, translation by Hasegawa)

(15) and (16) illustrate what are known as PPI rescuing phenomena, in which indeterminates with *ka* occurring in contexts that license weak NPIs<sup>10</sup> have narrower scope than a negative marker (see Hasegawa 1991 and Yoshimoto 2014 regarding PPI rescuing in Japanese).<sup>11</sup>

<sup>8</sup> As for the difference between indeterminates with and without the accusative marker *o*, see McGloin (1976), Hasegawa (1991) and Yoshimoto (2014).

<sup>9</sup> Though (15) and (16) are both ambiguous between the  $\exists > \text{NEG}$  and  $\text{NEG} > \exists$  readings, the  $\text{NEG} > \exists$  readings ‘(I) am surprised that John said nothing’ and ‘If no one comes, we have to get John’ are easier to obtain in (15) and (16), respectively.

<sup>10</sup> For more about weak NPIs, see Section 3 in this chapter.

<sup>11</sup> The basic property of PPIs is that they cannot take narrower scope than negation, as exemplified in (i) (see, for example, Szabolcsi 2004).

## 2.2 Indeterminates with *mo* and negation

In this subsection we will consider some characteristic properties of indeterminates with *mo*.

First, indeterminates directly followed by *mo* must be licensed by negation, as shown in (17), whereas those indirectly followed by *mo* need not necessarily be licensed by negation, as shown in (18).<sup>12,13</sup> The examples in (18) are cases where

- 
- (i) He did not eat something. (some > not, \*not > some)

However, negation can take wider scope than PPIs in some environments, as shown in (ii).

- (ii) I am surprised that John didn't call someone. (no one = not > some)

Szabolcsi (2004) calls this phenomenon *PPI rescuing*, and claims that PPI rescuing occurs in environments in which weak NPIs are licensed. 'Be surprised that' is such an environment. In (iii), a weak NPI *anyone* is licensed.

- (iii) I am surprised that John called *anyone*.

**12** See Watanabe (2005) and footnote 32 in Shimoyama (2011: 438) for theoretical discussion of the *mo ... mo ...* construction. See also Kato (1985) and Kato (1989).

**13** Several varieties of semantic analysis are possible for *mo*-constructions such as (18). For example, Nishigauchi (1986) analyzes (i) as (ii).

- (i)  $\int_{np} \int_{s'} \text{Dare } ga \text{ kai-ta} \int \text{tegami} \int \text{ni-mo } onazi \text{ koto } ga$   
           who NOM write-PST letter LOC-MO same thing NOM  
           *kai-teat-ta.* (Nishigauchi 1986: 197)  
           write-RES-PST

- (ii) For all  $x, y$ , if  $x$  is a person and  $y$  is a letter  $x$  wrote, the same thing was written in  $y$ .  
 (modified slightly from Nishigauchi 1986: 197)

- (ii) is one of the possible readings of (i), and corresponds to the reading in (iii).

- (iii)  $\int_{np} \int_{s'} \text{Dare } ga \text{ kai-ta} \int \text{dono } tegami \int \text{ni-mo } onazi \text{ koto } ga \text{ kai-teat-ta.}$   
           who NOM write-PST which letter LOC-MO same thing NOM write-RES-PST

Shimoyama (2008) treats another reading of sentences such as (i), using an iota operator  $\iota$ . She provides (v) as an interpretation of (iv), in which  $\iota x (\varphi x)$  means "the unique  $x$  that  $\varphi x$ ."

- (iv)  $\int \text{Dare } ga \text{ kat-ta } ie \int \text{-mo } taka-katta.$   
       who NOM buy-PST house-MO be.expensive-PST  
       'For everyone  $x$ , the house that  $x$  bought was expensive'

- (v)  $\forall x [\text{person}(x) \rightarrow \text{expensive}(\iota y [\text{house}(y) \ \& \ \text{person}(x) \ \& \ \text{buy}(y)(x)])]$

(Shimoyama 2008: 381)

*mo* occurs outside of the clause in which the indeterminate *dare* associated with it occurs.

- (17) a. \**Dare-mo nani-mo tabe-ta.*  
           who-MO what-MO eat-PST  
       b. *Dare-mo nani-mo tabe-na-katta.*  
           who-MO what-MO eat-NEG-PST  
           ‘No one ate anything.’
- (18) a. [*Dare ga suisen-si-ta*]                    *gakusei-mo susi o tabe-ta.*  
           [who NOM recommend-do-PST] student-MO sushi ACC eat-PST  
           ‘For every person *x*, if there is a student *y* whom *x* recommended, *y* ate sushi.’  
       b. [*Dare ga suisen-si-ta*]                    *gakusei-mo susi o*  
           [who NOM recommend-do-PST] student-MO sushi ACC  
           *tabe-na-katta.*  
           eat-NEG-PST  
           ‘For every person *x*, if there is a student *y* whom *x* recommended, *y* did not eat sushi.’

Second, indeterminates associated with *mo* are sensitive to word order (see footnote 23 in this chapter for a similar phenomenon). For example, (20), where the object

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Note that part of the reason sentences including indeterminates with *mo* are ambiguous in several ways is that the head nouns to be quantified are so-called bare nouns. Bare nouns can express plural objects too, and thus the use of individual variables alone such as *x* and *y* appears insufficient to account for the meaning of (vi), in which the adverbial phrase *ikutu-ka* quantifies over toys.

- (vi) [*Dare ga kat-ta*]    *omotya-mo ikutu-ka koware-tei-ta.*  
       [who NOM buy-PST] toy-MO how.many-KA become.broken-RES-PST

Nakanishi (2007)’s approach using lattice algebra may be more preferable for (vi), as demonstrated in (vii), in which  $\triangleleft$  represents the part-of relation, and “ $Z$  is  $P^{\text{DIST}}$ ” means that every atomic element of  $Z$  has the property  $P$ .  $Z$  and  $Y^{\text{SUM}}$  are both sums such that  $Z$  is a part of  $Y^{\text{SUM}}$ .

- (vii) For every  $x$ ,  $Y$ ,  $x$  is a person,  $Y$  is toys  $x$  bought, there was  $Z$  ( $\triangleleft Y^{\text{SUM}}$ ) such that  $Z$  was broken  $^{\text{DIST}}$ .

Lattice algebra has been used to deal with plurals and mass terms in natural languages. A lattice is a partial order  $(A, \leq)$  that has a greatest lower bound  $\wedge$  (also called *meet*) and a least upper bound  $\vee$  (also called *join*), in which  $A$  is a set of objects. The part-of relation  $\triangleleft$  is defined such that  $V(a \triangleleft b) = 1$  iff  $a \leq b$ , where  $V$  is an assignment function. For a more detailed explanation of lattice algebra and its use in semantic theory, see, for example, Link 1998.



*nani-mo* has been fronted by scrambling to a position preceding the subject [*dare ga katte-i-ru*] *inu-mo*, is less acceptable than (19), where no such fronting has occurred.

- (19) [*Dare ga kat-tei-ru*] *inu-mo nani-mo tabe-na-katta.*  
 [who NOM own-PROG-NPST] dog-MO what-MO eat-NEG-PST  
 ‘For every person *x*, dog *y*, thing *z*, if *y* was owned by *x*, *y* did not eat *z*.’
- (20) ??*Nani-mo [dare ga kat-tei-ru] inu-mo tabe-na-katta.*  
 what-MO [who NOM own-PROG-NPST] dog-MO eat-NEG-PST  
 ‘For every person *x*, dog *y*, thing *z*, if *y* was owned by *x*, *y* did not eat *z*.’

The same applies to the relative word order of indeterminates associated with *mo* and items that must be licensed by negation such as *ik-kai-mo* (‘one-time-MO’), as shown in (21) and (22).

- (21) *Satosi wa doko ni-mo ikkai-mo ika-na-katta.*  
 Satoshi TOP where GOAL-MO one.time-MO go-NEG-PST  
 ‘Satoshi didn’t go anywhere even once.’
- (22) ??*Satosi wa ikkai-mo doko ni-mo ika-na-katta.*  
 Satoshi TOP one.time-MO where GOAL-MO go-NEG-PST  
 ‘Satoshi didn’t go anywhere even once.’  
 (Shimoyama 2011: 436, gloss and translation by Shimoyama)

Compare (20) and (22) to (23), in which indeterminates associated with *mo* co-occur with indeterminates associated with *ka* (Hoji 1985, Shimoyama 2011).

- (23) a. [*Dare ga kat-tei-ru*] *inu-mo nani-ka o*  
 [who NOM own-PROG-NPST] dog-MO what-KA ACC  
*tabe-na-katta.*  
 eat-NEG-PST
- b. *Nani-ka o [dare ga kat-tei-ru] inu-mo*  
 what-KA ACC [who NOM own-PROG-NPST] dog-MO  
*tabe-na-katta.*  
 eat-NEG-PST
- (i) ‘For every dog *y* such that there was some *x* who is a person who owns *y*, there was some *z* such that *y* did not eat *z*.’
- (ii) ‘There was some *z* such that for every dog *y* such that there was some *x* who was a person who owns *y*, *y* did not eat *z*.’

Unlike (20) and (22), (23a) and (23b) exhibit no difference in meaning and are both ambiguous in the same way between (23i) and (23ii).

Third, a relative clause *R* cannot be combined with *dare-mo*, *nani-mo* and *dore-mo*, unlike *dono-N-mo*, as shown in the contrast in acceptability between (24a) and (24b).<sup>14</sup>

- (24) a. \*[*Sakana o tabe-ta*] *dare-mo huhei o*  
           [fish ACC eat-PST] who-MO complaint ACC  
           *it-ta/iw-ana-katta.*  
           say-PST/say-NEG-PST
- b. [*Sakana o tabe-ta*] *dono gakusei-mo huhei o*  
      [fish ACC eat-PST] which student-MO complaint ACC  
      *it-ta/iw-ana-katta.*  
      say-PST/say-NEG-PST  
      ‘Every student who ate fish complained/did not complain.’

But when *R* itself contains an indeterminate, not only *R-dare-mo*, *R-nani-mo* and *R-dore-mo* but also *R-dono-N-mo* becomes unacceptable, as seen in (25).<sup>15</sup>

- (25) a. \*[*Nani o tabe-ta*] *dare-mo huhei o*  
           [what ACC eat-PST] who-MO complaint ACC  
           *it-ta/iwa-na-katta.*  
           say-PST/say-NEG-PST
- b. ?\*[*Nani o tabe-ta*] *dono gakusei-mo huhei o*  
      [what ACC eat-PST] which student-MO complaint ACC  
      *it-ta/iw-ana-katta.*  
      say-PST/say-NEG-PST  
      (Intended meaning) ‘Every student who ate anything complained/didn’t complain.’

<sup>14</sup> When *dare-mo* in (24a) is followed by a nominative marker *ga* (i.e. *dare-mo ga*), the acceptability of (24a) is improved (p.c. Kenta Mizutani).

<sup>15</sup> (i) may be an exception to this, although it is preferable for the second *dono* to be omitted.

(i) (?) [*Dono sakana o tabe-ta*] *dono hito-mo byooki ni nat-ta.*  
      [which fish ACC eat-PST] which person-MO illness DAT become-PST  
      ‘Every person who ate any fish became ill.’

In general, in the construction of (25), D-linked indeterminates such as *dono* tend to improve acceptability of sentences containing them.

### 3 Negative polarity items

In Japanese, as in many other languages, there are expressions that are licensed in negative contexts, expressions that have traditionally been called negative polarity items (NPIs). Typical examples of NPIs in Japanese are listed in (26) (most examples here are taken from McGloin 1976; see also Kato 1985 and Yoshimura 1999):

- (26) **Negative adverbs:** *kanarazusimo* ‘(not) necessarily’, *masaka* ‘by (no) means’, *kessite* ‘never’, *yomoya* ‘certainly (not)’

**Degree adverbs:** *tootei* ‘utterly (not)’, *amari* ‘(not) much’, *sahodo* ‘(not) much’, *rokuni* ‘(not) well’, *yumenimo* ‘(not) even in a dream’, *mootoo* ‘(not) the slightest’, *mattaku* ‘(not) at all’, *sonnani* ‘(not) so much’, *sukosimo* ‘(not) even a little’

**Idiomatic phrases:** *V + mon (o) ka* ‘would never V’,<sup>16</sup> *sasitukae (+nai)* ‘be (no) hindrance to/be all right to,’ *manziri-to-mo-si (+nai)* ‘(not) sleep a wink’

Minimizing phrases as in (27) and indeterminates with *mo* such as *dare-mo* and *nani-mo* have also been classified as NPIs.

- (27) **Minimizing phrases:** *itido-mo* ‘(not) even once’, *bita-itimon* ‘(not) even a penny’, *nidoto* ‘(not) again’, *hitori-mo* ‘(not) even one person’, *ippo-mo* ‘(not) even a step’, *nani-hitotu* ‘(not) even one’

However, the syntactic status of these terms is a matter of debate, an issue to which we will return in Section 3.2.

It is widely accepted that there are in general two types of NPIs: weak vs. strong NPIs. Strong NPIs (e.g. additive *either* and idiomatic phrases such as *in weeks*) are licensed only in negative contexts. Weak NPIs (e.g. *any*, *ever*, *at all*) can be licensed even in affirmative (though restricted) contexts,<sup>17</sup> but are most commonly licensed

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<sup>16</sup> *Mon(o)ka* requires no overt negative marker, as shown in (i).

- (i) *Dare ga ayamar-u monoka.*  
 who NOM apologize-NPST MONOKA  
 Lit. ‘Who would ever apologize?’

(i) is a rhetorical question and thus creates a negative context (for more detailed discussion see McGloin 1976).

<sup>17</sup> The distinction between strong and weak NPIs is not the only way to classify NPIs. Van der Wouden (1997) divides NPIs into three groups:

- (i) a. Weak NPI: Weak negative polarity items are expressions which can felicitously occur in monotone decreasing contexts.  
 b. Medium strong NPI: Negative polarity items of medium strength may be licensed by anti-additive contexts but not by downward monotonic ones.

in contexts of indirect negation, as illustrated in (28a), or when occurring in phrases restricting the meaning of universal quantifiers or in antecedents of conditionals, as illustrated in (29a) and (30a).<sup>18</sup> Most Japanese NPIs are strong NPIs, and are thus not licensed in contexts in which weak NPIs are licensed. To see this, compare the weak NPI *at all* in English to the strong NPI *tittomo* (“(not) at all”) in Japanese in (28) to (30).

(28) Indirect negation

- a. *I don't think that Taro is working at all.*
- b. \*[Taroo ga tittomo hatarai-tei-ru] to omow-ana-i.  
[Taro NOM at.all work-PROG-NPST] QUOT think-NEG-NPST  
Lit. ‘(I) don’t think that Taro is working at all.’
- c. [Taroo ga tittomo hatarai-tei-na-i] to omo-u.  
[Taro NOM at.all work-PROG-NEG-NPST] QUOT think-NPST  
Lit. ‘(I) think that Taro is not working at all.’

(29) Restrictors on universal quantifiers

- a. *Every student who cares at all about the future of the world should be concerned about global warming.*
- b. \*[Sekai no mirai o tittomo kinisu-ru] dono  
[world GEN future ACC at.all care-NPST] which  
*gakusei-mo tikyuu-ondanka o sinpai su-beki da.*  
student-MO global-warming ACC worry do-should COP.NPST  
(Intended meaning) ‘Every student who cares at all about the future of the world should be concerned about global warming.’

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c. Strong NPI: Strong negative polarity items may only be licensed by anti-morphic contexts.

Contexts in which NPIs can occur are classified as in (ii).

- (ii) a. monotone decreasing contexts: few, seldom, hardly
- b. anti-multiplicative contexts: not every, not always
- c. anti-additive contexts: nobody, never, nothing
- d. anti-morphic context: not (see van der Wouden 1997 for a discussion of the meaning of each context)

For a detailed analysis of Japanese NPIs based on van der Wouden’s work, see Yoshimura (1999), which argues that most NPIs in Japanese are antimorphic. See also Hoeksema (2012).

**18** *Sonna ni* ‘(not) so much’) and (*kore*)-*izyoo* ‘(no) more (than this)’ might be classified as weak NPIs. They can appear in interrogative sentences, in the antecedents of conditionals, and in contexts of indirect negation, without being accompanied by a negative marker (see Shindoh 1983, Hattori 1993, Yoshida 1998, and Matsui 2013 for more detailed discussion).

- c. [Sekai no mirai o tittomo kinisi-na-i] dono  
 [world GEN future ACC at.all care-NEG-NPST] which  
 gakusei-mo tikyuu-ondanka o sinpai su-beki da.  
 student-MO global-warming ACC worry do-should COP.NPST  
 ‘Every student who doesn’t care at all about the future of the world should  
 be concerned about global warming.’

(30) Antecedents of conditionals

- a. *If his lectures are interesting at all, you should say so.*
- b. \*Kare no koogi ga tittomo omosiro-i-nara, soo  
 he GEN lecture NOM at.all be.interesting-NPST-COND so  
 i-u beki da.  
 say-NPST should COP.NPST  
 (Intended meaning) ‘If his lectures are interesting at all, (you) should say  
 so.’
- c. Kare no koogi ga tittomo omosiroku-na-i-nara, soo  
 he GEN lecture NOM at.all be.interesting-NEG-NPST-COND so  
 i-u beki da.  
 say-NPST should COP.NPST  
 ‘If his lectures are not interesting at all, (you) should say so.’

The examples in (28b), (29b) and (30b) show that *tittomo* cannot appear in contexts that license weak NPIs.

Most strong NPIs require the presence of negative markers in the same clause. This is called the *clausemate condition* (McGloin 1976, Muraki 1978, Kato 1985). A well-known exception that does not satisfy the clausemate condition is the *sika-nai* construction, which we consider in the next section.

### 3.1 The *sika-nai* construction

The *sika-nai* construction exhibits particular properties not shared by other NPIs in Japanese, and has thus been intensively studied in the literature (Oyakawa 1975, McGloin 1976, Muraki 1978, Kato 1985, 1994, Tsujimura 1993, Aoyagi & Ishii 1994, Yoshimura 1999, Nishioka 2000, Kawamori and Ikeya 2001, Kataoka 2006, Shimoyama 2011, among many others). What follows is a survey of the main properties of the *sika-nai* construction.<sup>19</sup>

<sup>19</sup> The combination of a *sika*-phrase with the negative morpheme *na* corresponds to *only* in English, and yields an affirmative implication, such as that (only) Taro came in (i).

*Sika-nai* constructions are typically subject to the clausemate condition, as exemplified in (31) to (33).

- (31) \*[*Taroo sika ki-ta*] *no dewa-na-i*.  
 [Taro except come-PST] NMLZ COP-NEG-NPST  
 (Intended meaning) ‘None came but Taro (only Taro came).’
- (32) \*[*Ken ga e<sub>i</sub> aw-ana-katta no*] *wa Hana ni sika<sub>i</sub> da*.  
 Ken NOM meet-NEG-PST NMLZ TOP Hana DAT except COP.NPST  
 Lit. ‘It was anyone but Hana that Ken did not meet.’  
 (Kimura and Takahashi 2010, 144: translation by Kimura and Takahashi)
- (33) \*[*Ken ga e<sub>i</sub> aw-ana-katta no*] *wa dare ni sika<sub>i</sub>*  
 Ken NOM meet-NEG-PST NMLZ TOP who DAT except  
*de-su ka?*  
 COP.POL-NPST Q  
 Lit. ‘Anyone but who was it that Ken did not meet?’  
 (Kimura and Takahashi 2010: 144, translation by Kimura and Takahashi)

However, there are cases in which *sika*-phrases do not satisfy the clausemate condition, at least as far as the surface structure of the construction is concerned.<sup>20</sup> (34b), for example, is acceptable, even though *Hanako sika* in (34b) is, due to scrambling, outside the clause that includes the negative marker (Oyakawa 1975, McGloin 1976, Kato 1994).<sup>21</sup>

- 
- (i) *Taroo-sika ko-na-katta*.  
 Taro-SIKA come-NEG-PST  
 ‘Only Taro came.’

**20** Note that the clausemate condition applies consistently to phrases that are licensed by negation in Japanese.

**21** Another context in which NPIs need not satisfy the clausemate condition is in complements of verbs of thinking such as *omou* ‘to think.’

As shown in (i), the NPI *tittomo* ‘(not) at all’ usually requires a negative marker in the same clause.

- (i) *Kono e wa tittomo {\*okasi-i/okasiku-na-i}*.  
 this picture TOP at.all {be.funny-NPST/be.funny-NEG-NPST}  
 ‘\*This picture is at all funny/This picture is not funny at all.’

(McGloin 1976: 385)

However, when *tittomo* appears in the complement of the verb *omou*, the negative morpheme *na* can be outside the clause, as demonstrated in (iib).

- (34) a. *Taroo wa [Hanako ga sigoto no koto sika*  
 Taro TOP [Hanako NOM work GEN matter except  
*hanas-ana-i]* *to it-ta.*  
 talk.about-NEG-NPST] QUOT say-PST  
 ‘Taro said that Hanako talks only about her work.’
- b. *Sigoto no koto sika<sub>i</sub> [Taroo wa [[Hanako ga t<sub>i</sub>*  
 work GEN matter except [Taro TOP [[Hanako NOM t<sub>i</sub>  
*hanas-ana-i]* *to] it-ta]*  
 talk.about-NEG-NPST] QUOT] say-PST]  
 Lit. ‘Only her work, Taro said that Hanako talks about.’

Nominalizers such as *koto* ‘thing’ and *hazu* ‘expectation’ also make it possible for *sika*-phrases to bypass the clausemate condition, as shown in (35) and (36) (Oyakawa 1975, Kato 1985, 1994). Kato (1994) calls these nominalizers “bridge nouns.”

- (35) *Zyon ga [eigo sika osie-ta] koto ga*  
 John NOM [English except teach-PST] NMLZ NOM  
*na-i.*  
 exist.NEG-NPST  
 ‘John has not taught anything other than English.’ (Kato 1994: 112)
- (36) *Zyon ga [eigo sika osie-ta] hazu ga*  
 John NOM [English except teach-PST] expectation NOM  
*na-i.*  
 exist.NEG-NPST  
 ‘It cannot be true that John has taught subjects other than English.’

Second, negative markers in *sika-nai* constructions license only a single *sika* in the same clause – cases of *sika* occurring multiple times in the same clause, such as (37c), are unacceptable (Oyakawa 1975).<sup>22</sup>

- 
- (ii) a. *Watasi wa [sono e wa tittomo okasiku-na-i] to omo-u.*  
 I TOP [that picture TOP at.all be.funny-NEG-NPST] QUOT think-NPST  
 Lit. ‘I think that that picture is not funny at all.’
- b. *Watasi wa [sono e wa tittomo okasi-i] to*  
 I TOP [that picture TOP at.all be.funny-NPST] QUOT  
*omow-ana-i.*  
 think-NEG-NPST

(McGloin 1976: 385)

<sup>22</sup> Oyakawa (1975) observes another peculiarity of the *sika-nai* construction. As shown in (i) and (ii), the choice of tense (i. e. non-past tense or past tense) in a clause affects the acceptability of this construction.

- (37) a. *Daigakusei sika manga o yom-ana-i.*  
 college.student except comic.book ACC read-NEG-NPST  
 ‘Nobody other than college students reads comic books.’  
 (Oyakawa 1975: 5, translation by Oyakawa)
- b. *Daigakusei wa manga sika yom-ana-i.*  
 college.student TOP comic.book except read-NEG-NPST  
 ‘College students read nothing other than comic books.’  
 (Oyakawa 1975: 5, translation by Oyakawa)
- c. *\*Daigakusei sika manga sika yom-ana-i.*  
 college.students except comic.book except read-NEG-NPST  
 (Intended meaning) ‘Nobody but college students read nothing but comic books.’  
 (Oyakawa 1975: 5)

The ban on multiple occurrences of *sika* in a clause does not apply to other items that require negation, as shown in (38). In (38), the two NPIs *kessite* ‘never’ and *ippo-mo* ‘(not) even one step’ are both licensed by a single negative marker in the same clause.

- (38) *Taroo wa kessite ippo-mo aruk-ana-katta.*  
 Taro TOP never one.step-MO walk-NEG-PST  
 ‘Taro never walked even one step.’

Third, *sika-nai* phrases in interrogative sentences exhibit peculiarities of word order with indeterminates (phenomena called *intervention* effects) (Takahashi 1990, Tanaka 1997).

- (39) a. *?\*Zyon sika nani o tabe-na-katta no?*  
 John except what ACC eat-NEG-PST Q  
 (Intended meaning) ‘What did only John eat?’
- b. *Nani<sub>j</sub> o Zyon sika t<sub>j</sub> tabe-na-katta no?*  
 what ACC John except eat-NEG-PST Q  
 ‘What did only John eat?’  
 (Takahashi 1990: 140, translation of (39a) by Takahashi)

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(i) *\*Taroo wa [gohan sika tabe-ru] koto ga na-i.*  
 Taro TOP [rice except eat-NPST] NMLZ NOM exist.NEG-NPST  
 Lit. ‘Taro never eats anything other than rice.’

(ii) *Taroo wa [gohan sika tabe-ta] koto ga na-i.*  
 Taro TOP [rice except eat-PST] NMLZ NOM exist.NEG-NPST  
 ‘Taro has never eaten anything other than rice.’ (Oyakawa 1975: 18)



As shown in (39), when an interrogative sentence includes both an indeterminate and a *sika*-phrase, the *sika*-phrase must intervene between the indeterminate and the negative marker. (39b) is acceptable, as the *sika*-phrase *John sika* intervenes between the indeterminate *nani* and the negative marker *na*.<sup>23</sup>

### 3.2 Negative concord items

As we noted in Section 1, it has been widely assumed in the literature that items sensitive to negation are NPIs in Japanese. However, it was pointed out in Kawamori and Ikeya (2001) that certain so-called NPIs in Japanese actually exhibit the properties of forms called negative concord items, and Watanabe (2002, 2004, 2005) developed a theoretical analysis treating these forms not as NPIs but as negative concord items.

As we have seen in Section 2, indeterminates with *mo* such as *dare-mo* ‘who + *mo*’, *nani-mo* ‘what + *mo*’ and *doko e/ni-mo* ‘where + GOAL + *mo*’ occur only in negative contexts, as shown in (40) and (41).

- (40) a. *Taroo wa nani-mo tabe-na-katta.*  
           Taro TOP what-MO eat-NEG-PST  
           ‘Taro did not eat anything.’

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**23** A similar constraint on word order can be observed in (i) to (iii) (Hoji 1985, Hasegawa 1995, Tomioka 2007, Erlewine and Kotek 2018).

- (i) a. *??Dare-mo ga nani o kai-masi-ta ka?*  
           who-MO NOM what ACC buy-POL-PST Q  
           (Intended meaning) ‘What did everyone buy?’  
       b. *Nani o dare-mo ga kai-masi-ta ka?*  
           what ACC who-MO NOM buy-POL-PST Q (Hoji 1985: 265)
- (ii) a. *\*Dare-mo nani o yom-ana-katta no?*  
           who-MO what ACC read-NEG-PST Q  
       b. *Nani o dare-mo yom-ana-katta no?*  
           what ACC who-MO read-NEG-PST Q  
           ‘What did no one read?’ (Tomioka 2007: 1570)
- (iii) a. *\*Hanako-mo nani o kat-ta no?*  
           Hanako-MO what ACC buy-PST Q  
           (Intended meaning) ‘What did Hanako buy too?’  
       b. *?Nani o Hanako-mo kat-ta no?*  
           what ACC Hanako-MO buy-PST Q  
           ‘What did Hanako buy too?’ (Hasegawa 1995: (40))

- b. \**Taroo wa nani-mo tabe-ta.*  
     Taro TOP what-MO eat-PST
- (41) a. *Taroo wa doko e-mo ik-ana-katta.*  
       Taro TOP where GOAL-MO go-NEG-PST  
       ‘Taro did not go anywhere yesterday.’
- b. ?? *Taroo wa doko e-mo it-ta.*  
       Taro TOP where GOAL-MO go-PST

The same applies to phrases with minimizers such as *ippo-mo* ‘(not) even one step,’ as shown in (42).

- (42) a. \**Taroo wa ippo-mo arui-ta.*  
       Taro TOP one.step-even walk-PST  
       Lit. ‘Taro walked even a step.’
- b. *Taroo wa ippo-mo aruk-ana-katta.*  
       Taro TOP one.step-even walk-NEG-PST  
       ‘Taro did not walk even one step.’

Indeterminates with *mo* and phrases containing minimizers have been traditionally classified as NPIs on the basis of the fact that they occur only in negative contexts.<sup>24</sup> However, on the basis of certain properties they exhibit that are not exhibited by NPIs in general, Watanabe (2002, 2004, 2005) proposes to treat them as negative concord items (NCIs), distinct from NPIs.<sup>25</sup> Specifically, Watanabe shows that they are distinct from NPIs in exhibiting the properties in (43a) to (43c), proposed by Vallduví (1994), and (43d), proposed by Giannakidou (2000).

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<sup>24</sup> Some accommodation, however, must be made syntactically for sentences containing bridge nouns, as shown in (i).

(i) *Taroo wa [ippo-mo arui-ta] koto ga na-katta.*  
     Taro TOP [one.step-even walk-PST] NMLZ NOM exist.NEG-PST  
     ‘Taro has never walked even one step.’

Regarding bridge nouns, see also (35) and (36) in Section 3.1.

<sup>25</sup> There are cases in which multiple negative expressions in a sentence are interpreted as a single negation. Negative expressions of this type may also be subsumed under the category of negative concord items.

(43) *Negative concord items:*

- a. cannot appear in nonnegative contexts
- b. can be modified by expressions like *almost*
- c. can be used as elliptical answers (Vallduví 1994)
- d. cannot be licensed across an indicative clause boundary  
(Giannakidou 2000)

The first of these properties, the inability of NCI's to occur in nonnegative contexts such as yes-no questions and conditionals, can be seen in the unacceptability of (44b), in contrast the acceptability of (44a), which involves an NPI in the same context.

- (44) a. *Have you seen anything?* (NPI)
- b. \**Nani-mo mi-masi-ta ka?*  
what-MO see-POL-PST Q  
(Watanabe 2004: 562, gloss by Watanabe)

Second, as suggested by (43b), NCIs can be modified by “almost,” whereas NPIs cannot, as shown in (45a). Indeterminates with *mo* can be modified by *hotondo* (“almost”), as demonstrated in (45b).

- (45) a. \**John didn't eat almost anything.* (NPI)
- b. *Zyon wa hotondo nani-mo tabe-na-katta.*  
John TOP almost what-MO eat-NEG-PST  
'John ate almost nothing.'  
(Watanabe 2004: 564, gloss by Watanabe)

Third, NCIs can appear as elliptical answers, whereas NPIs cannot, as shown in (46a). (46b) shows that indeterminates with *mo* behave the same way as NCIs.

- (46) a. Q: *What did you see?*  
A: \**Anything.* (NPI)
- b. Q: *Nani o mi-ta no?*  
what ACC see-PST Q  
'What did (you) see?'  
A: *Nani-mo.*  
what-MO  
'Nothing.'  
(Watanabe 2004: 564, gloss by Watanabe)

Finally, NCIs exhibit the property in (43d), the inability to license across an indicative clause boundary. Compare the NPI item *anyone* in (47a) to *dare-mo* in (47b).

- (47) a. *I did not say that John admired anyone.* (NPI)  
 b. *?\*Boku wa [Zyon ga dare-mo sonkei-sit-ei-ru to]*  
     I      TOP John    NOM who-MO    admire-do-STAT-NPST QUOT  
     *iw-ana-katta.*  
     say-NEG-PST
- (Watanabe 2004: 565, gloss by Watanabe)

Based on these tests, Watanabe concludes that indeterminates with *mo* and phrases containing minimizers in Japanese are negative concord items (NCIs) and thus inherently negative. He proposes that *nani-mo* and the negative morpheme *na* both contain a negative feature and that the negative feature of *nani-mo* is copied onto *na* through a process of feature checking, yielding a so-called double negation that results in the cancellation of negative meaning in the negative morpheme *na*. This can be illustrated as in (48):

- (48) a. *Nani mo mi-na-katta.*  
         what MO see-NEG-PST  
         ‘(I) saw nothing.’  
 b.
- 

(Watanabe 2005: 115)<sup>26</sup>

The predicate *mi-na-katta* in (48a), due to the cancellation of the negative feature on *na*, becomes equivalent in polarity to the affirmative predicate *mi-ta*. Accordingly, the missing predicate in (46bA) is *mi-ta*, which is a *copy* of the predicate *mi-ta* in (46bQ), thus accounting for the acceptability of (46bA) as an elliptical answer to (46bQ) (for further discussion, see Watanabe 2002, 2004, Giannakidou 2006 and M. Kuno 2007, 2011).

<sup>26</sup> We have added minor changes to Watanabe's tree diagram for the sake of consistency in the formatting of glosses and for improved readability.



- (50) a. *Taroo ga banana-mo ringo-mo tabe-na-katta.*  
 Taro NOM banana-MO apple-MO eat-NEG-PST  
 b. Conj > NEG: 'Taro ate neither bananas nor apples.'  
 c. \*NEG > Conj: 'Taro did not eat bananas or he did not eat apples.'
- (51) a. *Taroo ga banana to ringo o tabe-na-katta.*  
 Taro NOM banana and apple ACC eat-NEG-PST  
 b. Conj > NEG: 'Taro ate neither bananas nor apples.'  
 c. \*NEG > Conj: 'Taro did not eat bananas or he did not eat apples.'

(52) and (53) are further examples in which negation takes narrower scope than other operators, here the focus particles *dake* 'only' in (52) and *sae* 'even' in (53).

- (52) *Taroo-dake ko-na-katta.* (only > NEG, \*NEG > only)  
 Taro-only come-NEG-PST  
 'Only Taro did not come.'  
 (Shibata 2015: 235, gloss and translation by Shibata)

- (53) *Taroo-sae ko-na-katta.* (even > NEG, \*NEG > even)  
 Taro-even come-NEG-PST  
 'Even Taro did not come.'  
 (Shibata 2015: 235, gloss and translation by Shibata)

In (54) and (55) too, the reading in which negation takes narrower scope than the Japanese counterparts to *some* or *most* is preferred.

- (54) a. *Taroo ga nani-ka o tabe-na-katta.*  
 Taro NOM what-KA ACC eat-NEG-PST  
 b.  $\exists$  > NEG: 'There was something that Taro did not eat.'  
 c. \*NEG >  $\exists$ : 'Taro ate nothing.'
- (55) a. *Hotondo no gakusei ga ko-na-katta.*  
 most GEN student NOM come-NEG-PST  
 b. Most > NEG: 'As for most students, they did not come.'  
 c. \*NEG > Most: 'It was not the case that most students came'

In all the sentences (50) to (55), negation takes narrower scope than other operators. However, this does not mean that negation invariably takes narrower scope in Japa-

nese. Han, Storoshenko, and Sakurai (2004) present the results of an experiment on universally quantified expressions such as *subete* ‘all’ in Japanese and draw the conclusion that  $\forall > \text{NEG}$  reading is preferred by most speakers over the  $\text{NEG} > \forall$  reading in examples such as (56).<sup>30</sup>

- (56) *Donarudo ga orenzi subete o tabe-na-katta.*  
 Donald NOM orange all ACC eat-NEG-PST

(Han et al. 2004: 124, gloss by Han et al.)

Significantly, however, this experiment also showed that the reading in which negation takes wider scope than quantificational expressions is not impossible, given an appropriate context. In (57), for example, negation takes wider scope than a quantifier. Suppose that a butler was ordered to ring the bell twice, and that the speaker heard the bell ring only once. In such a context, (57) would take the reading in which negation takes wider scope than the quantificational expression, *ni-kai* (“two times”).

- (57) *Beru ga ni-kai nara-na-katta.* ( $\text{NEG} > 2, 2 > \text{NEG}$ )  
 bell NOM 2-times ring-NEG-PST  
 ‘The bell did not ring twice.’

While negation has a strong tendency to take narrower scope than other operators in Japanese, (56) and (57) show that this tendency is not exceptionless, and this fact has great importance, since these are counterexamples to a well-known hypothesis made by S. Kuno, which we will take up.

## 4.2 S Kuno’s functional approach

In this section, we take up a celebrated proposal by S. Kuno that negation in Japanese takes exceptionally narrow scope (S. Kuno 1980, 1983). As we have seen in Section 4.1, there are cases in which negation takes wider scope than other operators, and on the basis of such evidence S. Kuno’s approach has been challenged in a variety of studies, including Takubo (1985), Masuoka (1991), Kobayashi (1993), Yatabe (2002), and Shibata (2015).<sup>31</sup>

<sup>30</sup> The mean percentage acceptance rates for the relative scope relationships between the object quantifier phrase and negation observed by Han et al (2004: 125) were as follows:

(i) obj QP > NEG 98 %                      (ii) NEG > obj QP 54 %

<sup>31</sup> The particle *wa* also plays an important role in terms of the scope of negation. See, for example, Kato (1985) and Kato (1989).

An example of a type of sentence that plays a crucial role in S. Kuno's analysis is (58). According to S. Kuno, (58B) is unnatural as a reply to (58A).

- (58) A: *Kimi wa kono tokei o pari de kat-ta no ka?*  
 you TOP this watch ACC Paris LOC buy-PST NMLZ Q  
 'Did you buy this watch in Paris?'  
 B: *\*Iya, pari de (wa) kaw-ana-katta.*  
 no Paris LOC (CNT) buy-NEG-PST  
 (Intended meaning) 'No, I did not buy (it) in Paris.' (S. Kuno 1983: 126)

To account for this, S. Kuno presents the following hypothesis regarding the scope of negation in Japanese.

- (59) S. Kuno's hypothesis:  
 The scope of the negative morpheme *nai* does not extend beyond a verb/adjective or "noun/quasi-adjective + copula (*da*)" that immediately precedes it. (S. Kuno 1983: 127)

As we have already discussed in Section 4.1, there are obvious counterexamples to (59). However, the existence of such counterexamples might not be convincing enough to prove that (59) is invalid. So let us consider (59) more carefully.

According to (59), the scope of negation does not extend beyond the verb *kaw* in (58B). This can be schematized as in (60), in which [...] <sub>Focus</sub> represents a focused phrase, and [...] <sub>NEG</sub> the scope of negation.

- (60) \* [*pari-de*]<sub>Focus</sub> *kono-tokei o [kaw]-NEG*

What (58B) is intended to mean is that it was *not in Paris* that the speaker bought the watch, and accordingly *Pari-de* 'in Paris' in (58B) should fall within the scope of the negative marker *na*. S. Kuno's hypothesis (59), however, limits the scope of *na* to the verb *kaw*, so that *Pari-de* does not fall within the scope of negation, thus accounting for the unnaturalness of (58B) as a reply to (58A), according to S. Kuno.

(61) is another example considered by S. Kuno in his discussion of this issue.

- (61) A: *Kimi wa syuusen no tosi ni umare-ta no ka?*  
 you TOP end.of.war GEN year TEMP be.born-PST NMLZ Q  
 'Were you born in the last year of the war?'  
 B: *??Iya, syuusen no tosi ni wa [umare]-na-katta.*  
 no end.of.war GEN year TEMP CNT be.born-NEG-PST  
 (Intended meaning) 'No, I was not born in the last year of the war.'  
 (S. Kuno 1983: 126)



Again, according to hypothesis (59), the scope of negation is restricted to *umare* ('be-born'), and thus the focused phrase *syuusen-no-tosi* cannot fall within the scope of negation, from which it follows that (61B) is not acceptable as a reply to (61A).

There is one twist in his analysis. As S. Kuno himself acknowledges, there are exceptions to the hypothesis in (59). Let us consider (62).

(62) A: *Kyoo wa kuruma de ki-ta no ka?*  
 today TOP car INS come-PST NMLZ Q  
 'Did you come by car today?'

B: *Iya, kyoo wa kuruma de ko-na-katta*  
 no today TOP car INS come-NEG-PST  
*node, aruite-kaer-anakerebanaranai.*  
 because walk-return-must  
 'No, I didn't come by car today, so I have to walk home.'

(S. Kuno 1983: 129)

(62B) is natural as a reply to (62A). Since it has a reading that it is not by car that the speaker came, the focused phrase *kuruma-de* ('by car') can be seen to fall within the scope of negation here, as schematized in (63).

(63)  $[[kuruma-de]_{Focus} ko]-NEG$

To deal with this apparent counterexample to his hypothesis in (59), S. Kuno proposes a functional account by which (62B) differs from (58B) and (61B) in terms of *information structure*, as follows:

(64) Though it is not clear exactly what kind of information a fill-in-the-blank structure or a multiple-choice structure represents generally speaking, information related to a single event has the fill-in-the-blank structure, and information related to repeated events the multiple-choice structure.

(S. Kuno 1983: 130)<sup>32</sup>

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**32** Following this passage, S. Kuno (1983) continues on as follows:

When a sentence has no restriction on what candidates are relevant to a focused phrase (e.g. date of one's birth), it has a fill-in-the-blank information structure. When it has a strict restriction on that (e.g. means of transportation for commuting), it has a multiple-choice information structure. (S. Kuno: 130, 1983)

It is not clear exactly what is being claimed in this statement, but we conjecture this to mean that a fill-in-the-blank structure has an open set of alternatives, whereas a multiple-choice structure has a closed set of alternatives. As we will discuss in the next section, we too use the concept of set closure



The problem with (69) is twofold. One problem is that it is not clear on what grounds we must assume that there are two kinds of information structure. The other is that the existence of negative sentences having multiple-choice information structure constitute exceptions to the proposal that negation takes very narrow scope in Japanese, thereby weakening it.

In the next section, we will show that the way a set of alternatives is computed semantically or pragmatically plays a crucial role in the acceptability of the kinds of sentences S. Kuno discusses.

### 4.3 Computation of alternatives

Focus, questions, and other linguistic phenomena such as scalar expressions evoke alternatives. The concept of alternatives has been developed and elaborated mainly in two approaches. One approach adopts the semantic framework of Hamblin (1973), which is primarily concerned with the analysis of questions, and the other adopts the multi-dimensional semantic framework proposed by Rooth (1985, 1992), which is primarily concerned with the treatment of focus in a sentence. Though these approaches are not entirely the same in how they treat alternatives, we will ignore the details of such differences in these approaches, and will treat interrogative alternatives and focus alternatives as fundamentally similar phenomena. For example, the denotation of *Who walks?* is defined as a set of possible answers (i.e. alternatives) to this question, as shown in (70b). The denotation of *John<sub>F</sub> walks*, in which focus is placed on *John*, includes as a focus semantic value a set of propositional candidates (i.e. alternatives) to *x walks*, in which *x* is substituted for by an element in the domain *D* of entities (of type *e*), as shown in (71b).<sup>33</sup> The relevant denotations of *who* and *John<sub>F</sub>* are sets of entities, as shown in (70a) and (71a), respectively.<sup>34</sup>

<sup>33</sup> Types were originally introduced into set theory in order to solve problems within set theory, but in linguistics, types are mainly used to categorize expressions of various kinds based on their semantic status. The basic types are *e* and *t* (and *s* for intensional expressions). Individuals (or entities) are of type *e*, and truth values are of type *t*. All expressions are expressed by combinations of *e*, *t*, and *s*. For example, one-place predicates are functions from individuals to truth values, and they are therefore classified as  $\langle e, t \rangle$ . Two-place predicates are functions from individuals to one-place predicates and are therefore classified as  $\langle e, \langle e, t \rangle \rangle$ , and so on. For a more detailed explanation of types and their use in semantic theory, see, for example, Winter (2016).

<sup>34</sup> In Rooth's framework, phrases or sentences are given two kinds of denotation. One is their ordinary denotation ( $\llbracket \dots \rrbracket^o$ ), and the other is their focus semantic value ( $\llbracket \dots \rrbracket^f$ ). For example, the ordinary denotation of *Mary* is an individual *Mary* ( $\llbracket \text{Mary} \rrbracket^o = \text{Mary}$ ), and the ordinary denotation of *John<sub>F</sub>* is an individual *John* ( $\llbracket \text{John}_F \rrbracket^o = \text{John}$ ). The focus semantic value of *John* is the singleton set containing *John* ( $\llbracket \text{John} \rrbracket^f = \{\text{John}\}$ ).

- (70) a.  $\llbracket \text{who} \rrbracket = D_e$   
 b.  $\llbracket \text{who walks} \rrbracket = \{\text{walk}(x) \mid x \in D_e\}$
- (71) a.  $\llbracket \text{John}_F \rrbracket^f = D_e$   
 b.  $\llbracket \text{John}_F \text{ walks} \rrbracket^f = \{\text{walk}(x) \mid x \in D_e\}$

Though on the surface (70) and (71) treat “John<sub>F</sub> walks” and “who walks” as having the same denotation, this does not pose any substantial problems for our discussion.

Our purpose in this section is to show that phenomena like those discussed by S. Kuno are related to the semantic and pragmatic computation of alternatives. We propose that focus alternatives be computed based on patterns such as those in Figures 1 to 3, in which each figure represents a set of entities (of type  $e$ ).

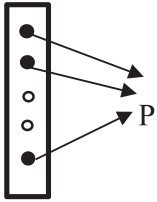


Figure 1

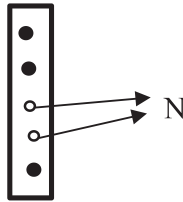


Figure 2

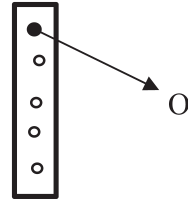


Figure 3

In Figure 1  $P$  is a set of entities that satisfy the predicate [John ate  $x$ ], in Figure 2  $N$  is a set of entities that satisfy the predicate [John did not eat  $x$ ], and in Figure 3  $O$  is the singleton set of the only entity that satisfies the predicate [John was born in  $x$ ].

To see how these figures work when alternatives are computed, let us consider (72) and (73).

- (72) A: *What did John eat last night?*  
 B: Cheese, carrots and bread.
- (73) A: *What didn't John eat last night?*  
 B: Fish and potatoes.

Figure 1 and Figure 2 represent what (72) and (73) express, respectively (in what follows, we will regard each of cheese, carrots, bread, fish and potatoes as a single entity for the sake of simplicity). In (72) at least cheese, carrots and bread are objects that satisfy the predicate [John ate  $x$  last night], as demonstrated in Figure 1. Things become somewhat more complicated for (73). For (73A) to be felicitous, speaker A

must know, for example, that John did not touch certain dishes that were served last night or that there was at least the possibility that John could have eaten such dishes last night. What is crucial here is that the domain of the set must be contextually closed or at least restricted. Otherwise, (73B) becomes infelicitous as an answer to (73B), because when the set is open or unrestricted, it is impossible to list up all objects that satisfy the predicate [John did not eat  $x$  last night]. In other words, (73B) would in that case violate the maxim of manner proposed by Grice as a corollary to his cooperative principle.

Figure 3 is a pattern in which *only one* alternative satisfies a predicate. To see that Figure 3 is distinct from Figure 2, let us consider (74) to (76).

(74) *#What year were you not born in?*

(75) *#Where didn't you buy this watch?*

(76) *#By what didn't you come to the office today?*

People are born only once and people buy a particular watch at one place, and thus the focus alternatives for (74) and (75) exhibit the pattern in Figure 3. (76) also exhibits the pattern in Figure 3, since the hearer of (76) took one and only one route to get to the office. Note that even though she might have used more than one transportation method (e.g. a bus and a subway) to get to the office, they were used as parts of one route.<sup>35</sup> Unlike (73), (74) to (76) are infelicitous even if their domains of alternatives are closed. Suppose that Mary asks (74) to John, and that Mary knows that John was born in either 1979, 1980 or 1981. In this situation the domain of alternatives is closed. However, (74) is still, at least under normal situations, unnatural: it is very hard to imagine a situation in which Mary needs to ask felicitously what year John was *not* born in.<sup>36</sup> The same applies to (75) and (76).

To sum up, Figures 1 to 3 are different from each other in terms of the semantic and pragmatic computation of alternatives. Semantic, because the computation

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<sup>35</sup> Takarajima (2014) also notes that sentences of this kind describe single events.

<sup>36</sup> This case should be distinguished from cases in which a predicate happens to be satisfied with only one alternative. In the latter case, alternatives are computed in the same way as the ones in Figures 1 or 2. (i) is one such case. Suppose that Mary told Bill that John had eaten only one dish last night, and Bill was interested in what John did not eat.

(i) What didn't John eat last night?

In this scenario, the fact that John did not eat more than one dish was just a product of chance and thus the condition of Figure 2 (i.e. the condition that the domain of the set must be contextually closed) applies to (i) unchanged.

is concerned with openness or closedness of a set of alternatives, and pragmatic, because it is concerned with Gricean maxims.

Among Figures 1 to 3, Figure 3 is the pattern that plays the most important role for our discussion, since the sentences discussed by S. Kuno noted above, such as (74) to (76), are *all* represented by Figure 3. (Note that (74) and (75) are sentences that S. Kuno claimed have a fill-in-the-blank information structure, and (76) is a sentence that he claimed has a multiple-choice information structure.) To see how these sentences exemplifying the pattern in Figure 3 are computed, let us begin with S. Kuno's sentence (61), repeated as (77).

- (77) A: *Kimi wa syuusen no tosi ni umare-ta no ka?*  
 you TOP end.of.war GEN year TEMP be.born-PST NMLZ Q  
 Lit. 'Is it the case that you were born in the last year of the war?'
- B: *\*Iya, syuusen no tosi ni (wa) umare-na-katta.*  
 no end.of.war GEN year TEMP (CNT) be.born-NEG-PST  
 'No, (I) was not born in the last year of the war.'

When there is only one alternative that satisfies the predicate [*B* was born in *x*], there are at least two ways of answering (77A). One way is to answer it with a sentence in which *x* is substituted with an alternative that satisfies the predicate [*B* was born in *x*], as exemplified in (78B'). The other is to deny the proposition  $\phi$  contained in question (77A) using the [ $\phi$ -no-da] construction by means of metalinguistic negation, as shown in (78B'').<sup>37</sup>

- (78) B': *Iya, 1947-nen ni umare-ta.*  
 no 1947-year TEMP be.born-PST  
 'No. (I) was born in 1947.'
- B'': *Iya, [syuusen no tosi ni umare-ta] no*  
 no [end.of.war GEN year TEMP be.born-PST] NMLZ  
*dewa-na-i.*  
 COP-NEG-NPST  
 Lit. 'No, it is not the case that (I) was born in the last year of the war.'

The question arises as to whether there is any other way of answering (77A), and the answer is yes. The situation in (77) is such that *A* refers to the possibility that *B* was born in the last year of the war and thus it should make sense that *B* would deny that possibility. Our claim is that (77B) is natural if the set of the alternatives is predictable from

<sup>37</sup> "To deny" is a term from Horn (1985, 1989). See Section 4 in this chapter for further discussion on this and metalinguistic negation in Japanese.

the context, and that otherwise (77B) is infelicitous (a similar remark (but on questions) was also made by S. Kuno 1983: 139). To explain what this means, let us consider Figure 4, in which  $R$  represents a set of entities, and  $d$  the denotation of a focused phrase.

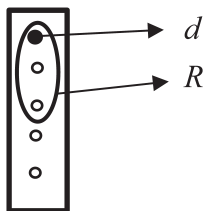


Figure 4

Let us call  $R$  a region, and each member of  $R$  a strong candidate for satisfying a predicate  $P$ .

- (79) A member  $m$  of  $R$  is a strong candidate for satisfying  $P$  if  $m$  is predictable from the context.<sup>38</sup>

(77B) can be felicitous when denying that  $d$  in the region satisfies  $P$ .<sup>39</sup> Generally speaking, when all alternatives in a set are strong candidates for satisfying  $P$ , and when the conversation participants know that is the case, to deny one of them (in this case  $d$ ) is informative. As an example, suppose that  $B$ 's wife is expecting a baby, and that  $B$  and  $B$ 's friend  $A$  are told by her doctor that she is expected to deliver on January 11th, though the delivery could also occur on the 10th or 12th. Suppose that  $A$  later asks  $B$  as in (80A).

- (80) A: *Akanboo wa 11-niti ni umare-ta no ka?*  
 baby TOP 11th-day TEMP be.born-PST NMLZ Q  
 'Was the baby born on the 11th?'

- B: *Iya, 11-niti ni (wa) umare-na-katta. 12-niti ni*  
 No, 11th-day TEMP (CNT) be.born-NEG-PST 12th-day TEMP  
*umare-ta.*  
 be.born-PST  
 'No, (it) was not born on the 11th. (It was) born on the 12th.'

<sup>38</sup> The concept "to be predictable from a context" might be still too weak, since focus alternatives are in a sense candidates predictable from the context. Regarding the importance of clarifying the mechanism by which alternatives are chosen, see, for example, Cohen (1999).

<sup>39</sup> Note that (74) to (76) are infelicitous even if they are in the context of Figure 4. As we discussed earlier, to ask, for example, what year John was not born in cannot be felicitous because of Grice's maxim of manner.

In this scenario, (80B) is natural. The alternatives, January 10th, 11th and 12th are provided by the context, forming the region. Note that an alternative that satisfies the predicate [the baby was born in *x*] does not necessarily have to be in the region. *B* could reply as in (81).

- (81) B: *Iya, 11-niti ni (wa) umare-na-katta. Nanto,*  
 no 11th-day TEMP (CNT) be.born-NEG-PST to.my.surprise  
*15-niti ni umare-ta.*  
 15th-day TEMP be.born-PST  
 ‘No, it was not born on the 11th. To my surprise, (it) was born on the 15th.’

The watch example (58), seen earlier in section 4.2, is another such example, repeated here as (82), except that (58B) is supplemented with an additional sentence in (82B).

- (82) A: *Kimi wa kono tokei o pari de kat-ta no ka?*  
 you TOP this watch ACC Paris LOC buy-PST NMLZ Q  
 ‘Did you buy this watch in Paris?’  
 B: *Iya, pari de (wa) kaw-ana-kat-ta. Rondon-de kat-ta.*  
 no Paris LOC (CNT) buy-NEG-PST London LOC buy-PST  
 ‘No, I didn’t buy (it) in Paris. (I) bought (it) in London.’

Imagine a scenario in which *B* is a brand-conscious shopper who had decided to buy a watch in an exclusive store chain with branches only in Paris, London, and Milan, and that *A* knows this. In such a scenario (82B) would sound natural. The focus alternatives such as Paris and London are provided by the context, and thus they are members of the region.

In the case of the vehicle sentence (62) discussed by S. Kuno, repeated here as (83), the means of transportation are limited in our world, as noted by S. Kuno (see footnote 32), and thus the focus alternatives may again be seen to be predictable from context.

- (83) A: *Kyoo wa kuruma de ki-ta no ka?*  
 today TOP car INS come-PST NMLZ Q  
 ‘Did you come by car today?’  
 B: *Iya, kyoo wa kuruma de ko-na-katta node,*  
 no today TOP car INS come-NEG-PST because  
*aruite-kaer-anakerebanaranai.*  
 walk-return-must  
 ‘No, I didn’t come by car today, so I have to walk home.’

The only difference between the vehicle sentence (83), on the one hand, and the year sentence (77) and the watch sentence (82), on the other, is that the alternatives make





A full discussion of the many topics related to metalinguistic negation goes beyond the scope of this chapter, and thus we will restrict ourselves here to a consideration of the reason that [*S-no-de-wa-na-i*] constructions such as (86B') behave differently from sentences with sentential negation such as (86B) in terms of the computation of focus alternatives.

(86) A: *Kimi wa kono tokei o pari de kat-ta no ka?*  
 you TOP this watch ACC Paris LOC buy-PST NMLZ Q  
 'Did you buy this watch in Paris?'

B: \**Iya, pari de (wa) kaw-ana-katta.*  
 no Paris LOC (CNT) buy-NEG-PST  
 (Intended meaning) 'No, I didn't buy (it) in Paris.' (S. Kuno 1983)

B': *Iya, [pari de kat-ta] no dewa-na-i.*  
 no [Paris LOC buy-PST] NMLZ COP-NEG-NPST  
 'No, it is not the case that (I) bought (it) in Paris.'

We claim that the reason [*S-no-de-wa-na-i*] constructions such as (86B') are natural is that they express the denial (in the sense of Horn 1985) of focus phrases in *S* and thus are not subject to a set-theoretical computation of alternatives such as those schematized in Figures 2 to 4.

To see that [*S-no-de-wa-na-i*] constructions are different from sentences with sentential negation in terms of computation of alternatives, let us compare (87) with (88). In the case of sentences with sentential negation such as (87), it is difficult, if not impossible, to have *pari de kau* and *oba ni morau* as mutual alternatives.

(87) *Kono tokei wa Pari de (wa) kaw-ana-katta. (#) Oba*  
 this watch TOP Paris LOC (CNT) buy-NEG-PST (#) aunt  
*ni morat-ta.*  
 DAT receive-PST  
 '(I) didn't buy this watch in Paris. (I) was given it by (my) aunt.'

As we have discussed in Section 4.3, only one alternative satisfies the proposition [the speaker bought the watch in *x*] in the first sentence of (87), and thus for it to be felicitous, there must exist strong alternatives to the focus phrase *Pari de* 'in Paris.' For example, (87) would be felicitous in a situation in which there were only two options available to the speaker for getting the watch – either purchasing it in Paris or being given it by her aunt. Without an appropriate context of this kind to generate strong alternatives, sentences such as (87) are judged infelicitous. In (88), on the other hand, there is no problem for the first sentence to be followed by the second sentence.

- (88) *Kono tokei wa [pari de kat-ta] no dewa-na-i.*  
 this watch TOP [Paris LOC buy-PST] NMLZ COP-NEG-NPST  
*Oba ni morat-ta.*  
 aunt DAT receive-PST  
 ‘It is not the case that (I) bought this watch in Paris. (I) was given it by (my) aunt’

Our claim is that (88) is natural because the negation here is computed as a denial of the phrase [*Pari de kat-ta*], from a set of alternatives {*Pari de kat-ta*, *Oba ni morat-ta*, ...}, and thus there are no complex computations necessary as in the case where the meaning is derived in the way schematized in Figures 2 to 4, as in (87).

(89) is another example in which the [*S-no-de-wa-na-i*] construction in the (b) example is not subject to a set-theoretical computation of alternatives, because, again, it expresses the denial of the phrase [*hotondo no gakusei*].

- (89) a. *Hotondo no gakusei ga ko-na-katta.*  
 most GEN student NOM come-NEG-PST  
 ‘Most students did not come.’  
 b. [*Hotondo no gakusei ga ki-ta*] no dewa-na-i.  
 [most GEN student NOM come-PST] NMLZ COP-NEG-NPST

Logically speaking, (89a) is ambiguous between two readings. One is the reading in which MOST takes wider scope than NEG, and the other is the reading in which NEG takes wider scope than MOST. However, most speakers find it difficult to obtain the latter reading for (89a). This is confirmed by the fact that, in an informal poll conducted by the author, many respondents had difficulty in judging the answer to (90).

- (90) Under the NEG > MOST reading would (89a) be true or false in a situation in which 20 out of 100 students came?

What is interesting is that (89b) was taken to be natural by the respondents for the situation in (90), even though (89b) is no different from (89a) in allowing the NEG > MOST reading. We speculate that (89b) is computed differently from (89a). That is, while the computation of quantification in (89a) is computed in the ordinary way, in (89b) *hotondo no gakusei* ‘most students’ is denied as an alternative that satisfies the predicate *ki-ta* (‘came’) from among a set of alternatives {most students, many students, a few students, no student, ...}. We claim that people have no difficulty understanding (89b) as taking the NEG > MOST reading, even though many of them have difficulty in answering (90) correctly, and that this is because they take (89b) as expressing the denial of a particular phrase.

In this section we have proposed that (86B) is different from (86B') in the way that alternatives are computed. (86B) is computed based on Figure 4, as discussed in the previous sections, whereas (86B') is meta-linguistically computed as the denial of a particular phrase, resulting in a difference in the naturalness of (86B') as opposed to (86B).

## 6 Conclusion

In the first half of this chapter we surveyed basic properties of negation in its relationship to scope, quantification and polarity in Japanese, three phenomena that have been and continue to be intensely debated in the literature. Despite the great number of discoveries on the relationship between these phenomena and negation that have been made in past research, a precise characterization of this relationship is still lacking and is the target of ongoing investigation. One reason for this is the existence of a large number of factors that complicate the interaction of such phenomena with negation in Japanese. For example, though bare nouns are regularly used in Japanese, their semantic status is still the subject of debate, so that the proper analysis of even a simple negative sentence such as *Gakusei ga sore wo sir-ana-i* 'student NOM, it ACC, know-NEG-NPST' is a largely unresolved matter. Another factor is the complexity of meaning introduced in negative contexts by particles such as *ka*, *mo* and *wa*. It has been assumed in the literature that the particles *ka* and *mo* confer quantificational force on indeterminates, but in the case of *mo* whether that quantificational force is existential or universal is not yet well understood. In this way, many issues concerning the relationship of quantification to negation in Japanese remain unresolved. Though we did not take up the particle *wa* in this chapter either in its role as a topic marker or contrast marker, this particle too influences the way negation interacts with various operators, with important effects on how negation is interpreted. The syntactic role of scrambling and its intervention effects in contexts of negation is yet another factor influencing negative interpretation that is not fully understood. Words cannot be scrambled totally freely in Japanese, complicating the task of understanding how scrambling interacts with the scope of negation. All these are topics in the semantics of negation posing important unanswered questions that must be left to future research.

The last half of this chapter was dedicated to the classic work on negation by S. Kuno. We reexamined his hypothesis that the scope of negation is narrow, not extending over a verb, adjective or "noun/quasi-adjective + copula (*da*)" immediately preceding it, and found it to be inadequate to fully account for the relevant phenomena of negation in Japanese. We claimed that the key to solving certain problems in the analysis of negation raised by S. Kuno lies in the way sets of alternatives relevant to the interpretation of negative sentences are semantically or pragmatically

cally computed and proposed an alternative analysis that is able to account for the unnaturalness of various sentences that cannot be accounted for in S. Kuno's framework.

## Acknowledgement

I wish to thank Takao Gunji, Nobuko Hasegawa, Tatsuya Jo, Phillip Morrow, Kimiko Nakanishi, Taisuke Nishigauchi, Itaru Takarajima, the members of the Tokai Semantics Group, and the anonymous reviewers of this chapter for their valuable comments at various stages of the research that went into the prefinal versions of this chapter. Special thanks go to Junko Shimoyama and Akira Watanabe for their detailed comments and discussions I had with them about ideas in this chapter, and to Chris Tancredi and Kenta Mizutani, who read an earlier draft of this chapter thoroughly and gave me valuable suggestions for improving it. Without the help of all these individuals, I could not have brought this chapter to completion, although, needless to say, any errors or defects remaining in the chapter are due to me.

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Magdalena Kaufmann and Sanae Tamura

# 11 Possibility and necessity in Japanese: Prioritizing, epistemic, and dynamic modality

## 1 Introducing ‘modality’

One of the most fascinating properties that set apart human languages from other systems of communication is their unlimited capacity to abstract away from the actual situation, which Hockett (1960) refers to as *displacement*. Displacement along the temporal dimension allows speakers to talk about circumstances and events obtaining at different times and to relate them to their actual now (see the chapters in Section III of this volume). Displacement along the modal dimension allows speakers to talk about circumstances and events that need not be part of the actual course of events at all. For this, languages use content words (like *belief* or *seek*), morphological marking (like the Romance subjunctives), functional words (like the English modal auxiliaries *must* and *may*), as well as complex constructions. ‘Modality’ can thus be defined as the category of grammatical devices that serve to express displacement along the modal dimension. In the following, we will build on this understanding to present an overview of the relevant expressions and constructions in contemporary Japanese.

While relatively standard in current formal semantic theories (see Portner 2009, Hacquard 2011), this understanding of modality is largely orthogonal to that found in the native tradition of Japanese linguistics and functional or cognitive approaches in Western linguistics (for recent overviews in English, see Larm 2006, Narrog 2012). In Japanese linguistics, ‘modality’ is typically defined as the category of linguistic expressions that serve to express the speaker’s current attitude to a proposition (Nakau 1979, Nitta 1989, Masuoka 1991, 1999). This characterization picks out a class of linguistic phenomena that is, on the one hand, much broader (encompassing for instance also politeness marking, negation, topic markers, and tense), but excludes, on the other hand, any instances of the relevant markers in the scope of tense, negation, or in nominalized constructions. In the following, we will stick to the understanding laid out in the first paragraph above as providing us with a semantically more homogeneous class of phenomena (see Narrog 2005 for related discussion).

Formal semantics standardly employs the tools and techniques of modal logic to capture modal displacement (‘Modality has to do with necessity and possibility,’ Kratzer 1981: 39). As we hope to show in the following, the formal semantic framework provides the necessary tools to draw fine-grained distinctions between expressions within the system of one particular language and to compare expressions and constructions across different languages. At the same time, our investigation of the

modal system of Japanese will allow us to reflect critically on the current state of the framework, furthering in particular our understanding of distinctions that have long been central to the work on modality in Japanese linguistics, but have only rather recently moved into the focus of attention in formal theories (see Section 6).

In our discussion of Japanese modality, we adopt a threefold distinction that reflects common assumptions in the formal semantic literature (see Portner 2009): *epistemic modality* (expressions that relate to displacement according to what is known or believed) is opposed to *prioritizing modality* (expressions that characterize what is permitted, required, or desired) as well as to *dynamic modality* (relating to what courses of events are compatible with a particular body of facts and/or an agent's abilities). Following Portner, we thus reserve deontic modality for the subtype of prioritizing modality that is concerned with rules, laws, and regulations of sorts.<sup>1</sup> Our investigation begins with a brief overview of expressions that are conventionally associated with modality in Japanese. It proceeds with a brief introduction to the formal semantic framework that provides the backdrop for the following discussion. Section 4 discusses particular aspects of how modality is expressed in Japanese, specifically the relationship between epistemic modality and evidentiality (4.1), conditional-like constructions expressing prioritizing modality (4.2), the limited overlap between markers used for more than one of epistemic, prioritizing, and dynamic modality (4.3), as well as different types of necessity modals (4.4). We investigate sentential mood in Section 5 and discuss subjectivity from theoretical and empirical points of view in Section 6. Section 7 offers a brief summary of our findings.

## 2 Modal expressions in Japanese

Unlike Indo-European languages, which tend to employ formally more uniform classes like auxiliaries or verbal moods, Japanese does not have a morphologically or syntactically uniform class of expressions devoted to the expression of modality. Notwithstanding, a series of lexical items, morphological markers, and syntactic constructions are standardly used to express notions along these lines, a connection that we take to be due to their conventional semantic meaning. Accordingly, we include them in this discussion of modal expressions.

We structure our presentation along the basic semantic distinctions of epistemic, prioritizing, and dynamic modality. One issue that becomes immediately apparent is that Japanese shows little overlap between the different subcategories; this contrasts sharply with modal verbs like English *may* or Italian *può* that can, among others, be

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<sup>1</sup> In contrast, all modal expressions relating to permissions, requirements, and wishes (which we have subsumed under 'prioritizing modality') are oftentimes grouped together under the label of 'deontic modality.'

used to express conjectures (epistemic), give permissions (prioritizing), and describe abilities (dynamic). A few exceptions to this will be pointed out in Section 4.3. For the discussion of modal markers and constructions, it is useful to keep in mind that Japanese distinguishes among two basic tenses, non-past (*-(r)u* NPST) and past or completed (*-ta* PST), as well as a gerund (*-te* GER).<sup>2</sup> Throughout, we will be assuming that modal markers combine with propositional expressions, their *prejacent*s.<sup>3</sup>

## 2.1 Expressions of epistemic modality

The expressions *daroo*, *hazu-da*, *nitigainai*, and *kamosirenai* are conventionally associated with the domain of knowledge and belief, that is, epistemic modality. *Daroo* (cf. (1); polite form *desyoo*) is considered a modal verb (e.g. Takubo 2009) or particle (Larm 2009) expressing the outcome of an inferential process (Hara 2006). At the level of form, it differs from *hazu* (originally a noun), which is followed by a form of the copula inflected for tense (we discuss semantic differences in Section 4.4).

- (1) *Ken wa siken ni ukar-u daroo.*  
 Ken TOP exam DAT pass-NPST TENT  
 ‘Ken will probably pass the exam.’
- (2) *Biiru wa imagoro hie-tei-ru hazu-da.*  
 beer TOP by.now get.cold-RES-NPST should-COP.NPST  
 ‘The beer ought to be cold by now.’

Syntactically complex *nitigainai* (lit. ‘there is no mistake in,’ Narrog 2009: 89) and *kamosirenai* (lit. ‘can’t know whether’) mark their prejacent as entailed by, and as compatible with, what is known, respectively.

- (3) *Asita wa ame ga hur-u nitigaina-i/kamosirena-i.*  
 tomorrow TOP rain NOM fall-NPST must-NPST/may-NPST  
 ‘It {will undoubtedly/may} rain tomorrow.’

Epistemic modality is typically distinguished from evidentiality (Palmer 1986): markers of epistemic modality convey to what extent the information expressed by the prejacent is compatible with the relevant beliefs of the agent, whereas evidentials indicate the source of the information expressed by their prejacent. In Section 4.1, we

<sup>2</sup> See e.g. Shibatani (1990) or Martin (1975) for the overall system, relevant allomorphies, and differences in speech style.

<sup>3</sup> For a critical discussion of the arguments against a uniform treatment of modals as propositional operators (all focusing on Indo-European languages), see Bhatt (1998) and Wurmbrand (1999).

review some of the arguments that motivate a distinction between the two categories in Japanese. For a more in-depth discussion of evidentiality, see Hara (this volume).

## 2.2 Prioritizing modality

Among modal expressions of this type, which express rules, regulations, or laws (all deontic under the traditional as well as under our classification), goals (teleological modality), and wishes (bouletic modality), we find a variety of morphosyntactically diverse constructions. Notably, Japanese uses conditional(-like) constructions involving evaluative predicates (see Section. 4.2).

- (4) *Tabete mo i-i.*  
eat-GER even/also be.good-NPST  
'You may eat (it).' (lit. 'It is good even if you eat (it).') (Akatsuka 1992, her (3))
- (5) *Kookoosei wa osake o non-de wa ik-e-na-i.*  
high.school.student TOP alcohol ACC drink-GER TOP go-POT-NEG-NPST  
'High school students must not drink alcohol.' (lit. 'If/when high school students drink alcohol, it can't go.')
- (6) *Eiyoo no ar-u tabemono o tabe-nakerebanarana-i.*  
nutrition GEN exist-NPST food ACC eat-must-NPST  
'(I) have to eat nutritious food.' (lit. 'If (I) don't eat nutritious food it doesn't become).'

The weaker notion that something is recommendable based on practical considerations (without being outright necessary) is often expressed by the comparative construction *hoo ga ii* (lit. 'the alternative is good/better').<sup>4</sup>

- (7) *Eiyoo no ar-u tabemono o tabe-ta hoo ga i-i yo.*  
nutrition GEN exist-NPST food ACC eat-PST alternative NOM  
be.good-NPST SFP  
'You'd better eat nutritious food.'

The formal noun *beki* with the copula *da* is semantically similar, but tends to involve a notion of moral or social appropriateness, which can be absent from *hoo ga ii* (see Narrog 2009: 87).

<sup>4</sup> See N. Iwasaki (this volume) for a discussion of sentence final particles (SFP) like *yo*.

- (8) *Nihon wa keizai taikoku o koe-te doo i-u*  
 Japan TOP economy big.nation ACC exceed-GER how say-NPST  
*kuni o mezas-u beki-na-no ka.*  
 country ACC aim.for-NPST should-COP-NMLZ Q  
 ‘What kind of country should Japan strive to be, going beyond being an economic power?’  
 (Mainichi Newspaper 1/1998; Narrog 2009: 83, his (53))

Various conditional constructions also express weaker endorsements (as compared to (5) and (6)) and are naturally used to give advice, as for example *-tara ii* in (9).

- (9) *Koko de yasun-dara i-i yo.*  
 here LOC rest-COND be.good-NPST SFP  
 ‘You should rest here.’

Desires and wishes can be expressed with the verbal affix *-tai* (cf. (10)). Complex constructions can also be used to express desires when the desire is for an action or event controlled by someone/something other than the speaker, such as *-te hosii* (see (11)) and *-te moraitai* (which contains *-tai*). *-ru tumori da* (see (12)) expresses what the relevant agent plans on doing (reminiscent of Condoravdi and Lauer’s 2016 *effective preferences*).<sup>5</sup>

- (10) *Biiru ga nom-ita-i (des-u).*  
 beer NOM drink-DESI-NPST COP.POL-NPST  
 ‘I’d like to drink a beer.’
- (11) *Tabe-te hosi-i (des-u).*  
 eat-GER want-NPST COP.POL-NPST  
 ‘I want you to eat (this).’

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<sup>5</sup> Note that this holds only for non-past prejacent. Past prejacent receive epistemic interpretations:

- (i) *Watasi narini seiippai yat-ta tumori des-u. Seika-o*  
 I in.one’s.own.way hard do-PST intention COP.POL-NPST. result-ACC  
*mi-te kudasa-i*  
 look.at-GER give.POL-IMP  
 ‘I think that, in my own way, I did the best I could. Please look at the results.’  
 (Nihongo Kizyutu Bunpoo Kenkyuukai 2003: 59, our translation)

A somewhat similar effect can be observed with English *think*: ‘AGENT think(s) that AGENT will  $\varphi$ ’ can obtain a planning reading if  $\varphi$  describes a course of events under the control of the respective agent but obtains an epistemic reading otherwise. An anonymous reviewer points out that for Japanese *tumori* as well, non-past may not entirely preclude epistemic readings. Further research will be required to determine what triggers these differences in interpretation.

- (12) *Sinseiken ni hatarakikake-ru tumori*  
 new.government DAT make.approach-NPST intention  
*da/des-u.*  
 COP.NPST/COP.POL-NPST  
 ‘I intend to make approaches to the new government.’

(from Kaiser & al., 2001: 552)

Finally, imperatives (verbal endings *-e/-yo/-ro*) and *-nasai*, (used with children and for giving instructions) as well as *-te kudasai* (for polite requests, composed of the gerund followed by a fossilized imperative form of the verb *kudasaru* ‘(someone in a superior position to the speaker) gives to the speaker or someone in the speaker’s in-group’), cf. (13), and exhortatives (verbal ending *-(y)oo*), cf. (14), also express notions of prioritizing modality:

- (13) *Kore o {a. tabe-ro, b. tabe-nasai, c. tabe-te kudasai}!*  
 this ACC eat-IMP eat-HON.IMP eat-GER please  
 ‘(Please) eat this.’ {(a) direct command/(b) instruction/(c) polite request}
- (14) *Susi o {tabe-yoo, tabe-mas-yoo}.*  
 sushi ACC eat-COHORT eat-POL-COHORT  
 ‘Let’s eat sushi.’

These markers are often excluded from the study of modality proper, because they are generally taken to determine sentential form types that together with declarative and interrogative sentences form the paradigm of clause types (or sentential moods). The relationship between clause types and modality will be discussed in Section 5.

## 2.3 Dynamic modality

Dynamic modality regards the abilities, skills, and inherent properties of individuals (‘participant-internal modality,’ van der Auwera & Plungian 1998), but it can also take into account facts about the larger situation. This gives rise to a main distinction between ability modality (referring to acquired or inherent skills) and circumstantial modality. Japanese has two expressions that are reserved for dynamic modality: the allomorphic verbal suffixes *-eru* and *-rareru*, and the analytical expression *koto ga dekiru* (lit. ‘thing NOM is possible’). Moreover, some of the conditional(-like) constructions used for prioritizing modality can be used for circumstantial modality as well. (15) and (16) are examples of ability modality. In contrast to other languages (e.g. German, Kratzer 1981), Japanese does not distinguish according to the origin of

an ability (learned, innate, or acquired otherwise): *-eru/-rareru* or *-koto ga dekiru* can be used throughout.<sup>6</sup>

- (15) *John wa tagaloggo o {hanas-e-ru, hanas-u koto*  
 John TOP Tagalog ACC speak-POT-NPST speak-NPST NMLZ  
*ga deki-ru}.*  
 NOM be.possible-NPST  
 ‘John can speak Tagalog.’ (context: learned ability)
- (16) *Watasi no musume wa yuurei to {hanas-e-ru, hanas-u*  
 I GEN daughter TOP ghost COM speak-POT-NPST speak-NPST  
*koto ga deki-ru}.*  
 NMLZ NOM be.possible-NPST  
 ‘My daughter can speak with ghosts.’ (context: innate ability)

*-eru/-rareru* and *koto ga dekiru* can also express what an individual is able to do by virtue of his or her endowment in conjunction with other aspects of the world:

- (17) *Kanemoti na node, biru o marugoto {ka-e-ru,*  
 rich COP because building ACC whole buy-POT-NPST  
*ka-u koto ga deki-ru}.*  
 buy-NPST NMLZ NOM be.possible-NPST  
 ‘Because she is rich, she can buy a whole building.’
- (18) *Kyoo wa hare-tei-ru kara kirei-na syasin o*  
 today TOP become.clear-RES-NPST because beautiful-ADN picture ACC  
*{tor-e-ta, tor-u koto ga deki-ta}.*  
 take-POT-PST take-NPST NMLZ NOM be.possible-PST  
 ‘Since the sky was clear today, we were able to take beautiful pictures.’

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<sup>6</sup> Narrog (2008) observes that the use of simple non-past for general abilities is less natural in Japanese than it is in English or German, for instance:

- (i) *Kono erebeetaa wa 800kiro made {hakob-e-ru, hakob-u*  
 this elevator TOP 800kg up.to carry-POT-NPST carry-NPST  
*koto ga deki-ru, ??hakob-u}.*  
 NMLZ NOM can-NPST carry-NPST  
 ‘This elevator can carry up to 800 kg.’/‘This elevator carries up to 800kg.’



That *-eru/-rareru* and *koto ga dekiru* can be used to express both what an agent is able to do in principle, and what he or she can do in (potentially limiting) specific circumstances is brought out most clearly by examples that contrast these two interpretations (cf. (20)):

- (19) *Watasi wa piano o hik-e-ru. Sikasi, ima wa yubi*  
 I TOP piano ACC play-POT-NPST but now TOP finger  
*o itame-tei-ru node hik-e-na-i.*  
 ACC hurt-RES-NPST because play-POT-NEG-NPST  
 ‘(In general) I can play the piano. But right now since I’ve hurt my fingers, I can’t play.’

In order to express what is inevitable according to the internal endowment of an organism or to the relevant circumstances, Japanese resorts to complex constructions like *sikata ga nai* (lit. ‘there is nothing one can do about it’), *zaruenai* (lit. ‘not doing it is not a possibility’), but also *-nakereba naranai* (lit. ‘if not ... it doesn’t become’).

- (20) *Kaze o hii-tei-ru node watasi wa hana o*  
 cold ACC catch-RES-NPST because I TOP nose ACC  
*{kama-zaru o e-na-i/ kam-ana-kereba nara-na-i}.*  
 blow-NEG.NMLZ ACC be.able-NEG-NPST blow-NEG-COND become-NEG-NPST  
 ‘Since I’ve caught a cold, I have to blow my nose’

*-Nakereba naranai* is typically associated with prioritizing modality (see. Section 2.2), and is thus one of the expressions that can be used across the major category boundaries (see Section. 4.2 for references and further discussion).

### 3 Modality in formal semantics

Standard approaches in formal semantics investigate the interpretation of natural language sentences against the backdrop of a set of possible worlds *W* that jointly represent all conceivable states of affairs, one of which represents the actual world. Each world by itself determines the truth value of all atomic or complex (declarative) sentences that do not involve displacement. In contrast, the truth-value of modal sentences, i. e. sentences that express displacement from what is actually the case, is determined at a given world of evaluation *w* in terms of what is the case in other

worlds  $w'$  that stand in particular relations to  $w$ .<sup>7,8</sup> For any (complex or atomic) declarative sentence  $\phi$ , the **proposition** expressed by  $\phi$  is identified with the set of possible worlds at which it is true.

Given a careful description of the association between specific constructions and their characteristic conversational functions, formal semantic theories aim to predict these associations from the semantic properties of the expression in connection with a model of the contextual settings (e.g., Stalnaker 1978, Lewis 1979) and a suitable representation of conversational functions (e.g., Austin 1962, Searle 1969). Moreover, formal semantic theories explore meaning relations between different expressions, specifically, which sentences are compatible with each other or entail each other, and how changes in various grammatical parameters (e.g. person or tense) affect the semantic meaning and thereby possibly the functional potential of an expression. The investigation of modal expressions in formal semantics builds largely on the work of Angelika Kratzer (1981, 2012, and others). Focusing originally on modals in English and German, the framework has by now been extended to address modality in an increasing number of typologically unrelated languages, resulting in refinements and modifications, some of which will be discussed in later sections.

Kratzer's analysis relies on basic assumptions from modal logic. Modal verbs like *must* and *may* are taken to express universal or existential quantification over a suitable set of possible worlds (understood as complete specifications of hypothetical or actual states of affairs) that conform to a particular body of information. They thereby reflect what is known (epistemic modality), what is commanded (deontic modality), what is necessary to reach one's goals (teleological modality), what is compatible with the circumstances or one's abilities (dynamic modality), or what is desired (bouletic modality). For each expression, we can distinguish between its *modal force* (existential vs. universal quantification) and its *modal flavor* (the nature of the relevant body of information). Kratzer observes that one and the same expression can convey different modal flavors, and she proposes to treat this as an instance of context dependence rather than lexical ambiguity. To capture this in the simplest form, like an operator in classical modal logic, a modal like *must* or *may* is evaluated with respect to a parameter (an *accessibility relation*) that represents the relevant body of information relative to the world of evaluation  $w$  by relating  $w$  to all and only the worlds in which the body

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7 The crucial contribution of modal logic is thus not a fixed inventory of two quantifiers over possible worlds (i.e., it does not 'narrow down the object of research to two easily identifiable categories' Narrog 2009: 8). Rather, its innovative contribution is that the interpretation of certain constructions can depend on the semantic values of expressions at worlds other than the one of evaluation, where these other worlds are related to the world of evaluation in reflecting what is known, believed, permissible, desired, etc. at the world of evaluation. This makes it possible to capture inference patterns between different modal as well as modal and non-modal sentences.

8 Assumptions about non-declarative sentences are more varied. See Portner (2018) for an overview and Section 5 for clause types in relation to modality.

of information is true (for instance, a specific  $R^{\text{Speaker-epi}}$  relates any world  $w$  to just the worlds in which everything that the speaker knows in  $w$  is true). An accessibility relation  $R$  is thus a set of pairs of worlds  $\langle w, v \rangle$  such that  $v$  is accessible from  $w$  (in view of whatever criteria  $R$  is supposed to represent). Technically, an accessibility relation is a subset of the Cartesian product of the set of worlds with itself ( $R \subseteq W \times W$ , for all accessibility relations  $R$ ).<sup>9</sup>

Modal expressions can then be interpreted as quantifiers over the sets of possible worlds that are accessible according to such a contextually given accessibility relation.

(21) ‘*must*  $\phi$ ’ is true w.r.t.  $w$  and  $R$  iff  $\phi$  is true at all worlds  $v$  s.t.  $\langle w, v \rangle \in R$ .

(22) ‘*may*  $\phi$ ’ is true w.r.t.  $w$  and  $R$  iff  $\phi$  is true at some world  $v$  s.t.  $\langle w, v \rangle \in R$ .

The modal flavor of *must* and *may* results from which accessibility relation is salient in the context of the conversation in which the modal expression is used. For instance, if the accessibility relation that is salient in the context of the conversation represents the knowledge of the speaker of the conversation, we obtain a speaker epistemic interpretation (e.g., *It must be raining.* = ‘At all worlds that are compatible with what I know, it is raining.’).

In the philosophical literature, conditional clauses like (23) are often treated as expressing material implication (cf. (24); see Grice (1975) for a defense of this view).

(23) *If Jon is in his office, the lights are on.*

(24) Sentence (23) is true at  $w$  iff it is not the case that Jon is in his office in  $w$  and the lights are off in  $w$ .

However, the currently prevalent view in linguistic (formal) semantics sees conditionals as a complex modal construction. It is pointed out that sentences like (23) have a reading on which the modal *must* does not seem to contribute anything over and

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<sup>9</sup> In contrast to classical modal logic, Kratzer models accessibility of worlds through conversational backgrounds, which are functions  $f$  from worlds to sets of propositions. If only one conversational background is employed, the corresponding accessibility relation can be defined easily as  $R_f = \{\langle w, v \rangle \in W \times W \mid \text{for all } p \in f(w), v \in p\}$  (this is the set of all pairs of worlds  $\langle w, v \rangle$  such that world  $v$  makes true all propositions in the set  $f(w)$ ). In a more refined version of the framework (graded modality), Kratzer individuates accessible worlds through two parameters: a modal base that reflects inviolable background information (facts, knowledge), and an ordering source that represents possibly conflicting criteria (stereotypes, laws, preferences,...) and selects from all the worlds compatible with the modal base those that are ideal in the relevant sense. Abstracting away from considerations of infinite approximation to an ideal (as per the Limit Assumption of Lewis (1973)), the resulting domain of quantification can again be represented by an accessibility relation derived from these parameters.

above what is expressed by the conditional construction as such (i. e., (25) is interpreted roughly like (23)). The truth conditions of the entire construction can be captured if we assume that *must* is evaluated with respect to a modified accessibility relation  $R^{+A}$  that results from rendering inaccessible any worlds at which the antecedent *A* is not true (i. e.,  $R^{+A} = \{ \langle w, v \rangle \in R \mid v \in A \}$ , the set of all pairs  $\langle w, v \rangle \in R$  such that *A* is true at *v*).

(25) *If Jon is in his office, the lights must be on.*

(26) Sentence (25) is true at *w* w.r.t. *R* iff ‘*must [the lights be working]*’ is true at *w* w.r.t.  $R^{+ \text{‘Jon is in his office’}}$ . Hence, (25) is true at *w* w.r.t. *R* iff ‘*the lights are working*’ is true at all worlds *v* s.t.  $\langle w, v \rangle \in R$  and ‘*Jon is in his office*’ is true at *v*.

If the speaker’s knowledge is used as the accessibility relation, (25) is predicted to be true at those worlds *w* that are such that all worlds *v* that are compatible with what the speaker knows in *w* and at which Jon is in his office, the lights are on. Conditional clauses like (23) that do not contain an overt modal verb in the consequent are generally taken to contain a covert version of the overt epistemic *must* in (25).<sup>10</sup>

In the following we will aim to show that, even though developed against the backdrop of languages like English and German, Kratzer’s framework is very useful for the study of the Japanese modal system as well.

## 4 Particularities of the Japanese modal system

### 4.1 Epistemic modality and evidentiality

In contrast to epistemic markers, which qualify the plausibility of a proposition according to the beliefs of an agent, evidential markers indicate the source of information for the sentence they modify.<sup>11</sup> This distinction is not always easy to draw for actual linguistic markers. In fact, it is a matter of on-going debate if it is possible to draw a clear-cut line between these two notions at all. Some authors argue that

<sup>10</sup> In fact, many speakers do not perceive (23) and (25) to be entirely equivalent. One possible answer to this is that the covert and the overt modal require slightly different accessibility relations (for instance, what the speaker knows vs. what the speaker takes to be most plausible). See Kaufmann and Kaufmann (2015) for extensive discussion of conditionals in Kratzer’s framework and related accounts.

<sup>11</sup> Aikhenvald (2004) supports a particularly strong notion of evidentiality under which it pertains only to languages in which source of evidence is encoded obligatorily. This is not the case in Japanese – absence of evidentiality marking in tensed sentences is generally not seen as committing the speaker to being in the possession of direct evidence. See Hara (this volume) for discussion.

epistemic modals even in languages like English or German should be treated as evidentials (Westmoreland 1998, Drubig 2001). Other authors suggest that only certain expressions combine both aspects (for Japanese, McCready and Ogata 2006). In Japanese, the markers standardly classified as epistemic modality (*daroo*-class) and those classified as evidentials (*yoo-da*-class) have been argued to pattern differently on at least the following parameters (list from Narrog 2009: 118;123, see further references there). Firstly, they differ in terms of what adverbs they can combine with (*daroo*-like markers cannot combine with *doomo/dooyara* ‘apparently,’ Morimoto 1994; *kitto* ‘surely’/*tabun* ‘probably’/*hyottosuruto* ‘maybe’ cannot occur with *yoo-da*, Takubo 2006) and in how other adverbs are interpreted (*imagoro* ‘around this time,’ Takubo 2006, 2009). Secondly, the two classes are argued to differ in their inferential behavior: *daroo*-like elements are used for deduction (reasoning to results), whereas *yoo-da*-like elements are used for abduction (reasoning to causes) or induction (Takubo 2009). Thirdly, *daroo*-like but not *yoo-da*-like elements can be embedded under *omou* ‘think’. Fourthly, the two classes are supposed to differ in their scope taking behavior with respect to other quantificational operators.

Unfortunately, these criteria fail to neatly divide the respective markers into two categories. For instance, *hazu da* and *nitigainai* are generally considered epistemic modals and tend to pattern with *daroo* on three of the four criteria. Yet *nitigainai* patterns with the evidentials in allowing inferences to reasons (abduction), whereas *hazu da* does not.<sup>12</sup> Narrog (2009: 102) exemplifies this with the following example from Okabe (2004):

- (27) *Karada ga daru-i. Kaze o hii-ta*  
 body NOM be.languid-NPST cold ACC catch-PST  
*nitigaina-i/ ?hazu-da.*  
 must-NPST/ should-COP.NPST  
 ‘I feel listless. I must have caught a cold.’

To the best of our knowledge, neither the list of characteristics nor the exceptions observed have been accounted for in the literature, and we currently have nothing to add to that. The contrasts mentioned above provide enough of an empirical motivation to retain the traditional distinction; accordingly, evidentials are discussed separately in this handbook (Hara, this volume).

<sup>12</sup> Takubo (2009) describes *nitigainai* as having both evidential and epistemic uses.

## 4.2 Conventionalized evaluative conditional constructions

In contrast to the better studied modal systems of Indo-European languages, which build largely on auxiliary verbs, at least for prioritizing modality, the Japanese system makes heavy use of conditionalized evaluative constructions (CECs). Formally, these look like conditional clauses with (just) an evaluative predicate (roughly ‘good’/‘bad’) in the consequent. CECs are commonly used to express what is obligatory, wanted, or a necessary means to achieve one’s goals, and to express compatibility with what is permissible, desirable, or planned: compare (4)–(6) from Section 2.2, repeated here.

- (4) *Tabe-te mo i-i.*  
eat-GER even/also be.good-NPST  
‘You may eat (it).’ (lit. ‘It is good even if you eat (it).’) (Akatsuka 1992, her (3))
- (5) *Kookoosei wa osake o non-de wa ik-e-na-i.*  
high.school.student TOP alcohol ACC drink-GER TOP go-POT-NEG-NPST  
‘High school students must not drink alcohol.’ (lit. ‘If/when high school students drink alcohol it can’t go.’)
- (6) *Eiyoo no ar-u tabemono o*  
nutrition GEN exist-NPST food ACC  
*tabe-na-kereba-nara-na-i.*  
eat-NEG-COND-become-NEG-NPST  
‘(I) have to eat nutritious food.’ (lit. ‘If (I) don’t eat nutritious food it doesn’t become.’)

As these complex constructions serve for similar speech acts, and are translated naturally as sentences with modal verbs in English, it is tempting to analyze the material attached to the apparent conditional antecedents as atomic expressions that are interpreted roughly like their English equivalents. Indeed, *-te mo ii* and *-nakereba naranai* are routinely glossed as ‘must’ and ‘may’ in English (see for instance Johnson 1994, Larm 2006, Moriya and Horie 2009).<sup>13</sup> But even if such constructions are conventionalized to a high degree, it is far from clear that they should be treated as atomic expressions in this sense.<sup>14</sup> Kaufmann (2017) emphasizes that in assessing

<sup>13</sup> Note that it is not always clear to what extent the authors commit themselves to the position that these strings constitute semantically opaque units that are interpreted like their English counterparts. For instance, Johnson (1994: 64) writes that *ni-tigai-nai* ‘is interpreted as the English modal “must.”’ One difference, however, is that *ni-tigai-nai* does not express logical necessity in Japanese.’

<sup>14</sup> In the Japanese literature, the issue is discussed by Hanazono (1999), who argues that, for instance, *-nakereba naranai* ‘if ... not, BAD<sub>1</sub>’ behaves more like a unit syntactically than the more colloquial *-nakereba dame* ‘if ... not, BAD<sub>2</sub>.’

the status of CEC items, one should distinguish between the question of whether or not an item is an atomic chunk morphosyntactically (and should thus correspond to a single lexical entry) from whether or not an expression's interpretation is equivalent to that of its closest counterpart in English. At least three morphosyntactic or semantic aspects shed doubt on an analysis of CECs as lexical elements. Firstly, Japanese has a large class of different conditional markers; see Takubo (this volume, Section IV). Most of them can be used for CECs, that is, to express necessity or possibility along the lines of what is exemplified in (4) to (6).<sup>15</sup> In this, each marker displays the same morphophonological properties (contractions, dialectal variations) as in ordinary conditionals. Secondly, for each choice of a particular conditional marker, there is a large and possibly open class of expressions that can appear in the consequent position. Following Akatsuka (1992: 4), the general schema for CECs can be given as in (28), with a variety of different lexical instantiations for GOOD, BAD, and the conditional connectives.<sup>16</sup>

- (28) 'IF p, (Not) GOOD/BAD,' where GOOD/BAD is the speaker's evaluation.
- |       |                    |                 |                 |                    |                   |     |
|-------|--------------------|-----------------|-----------------|--------------------|-------------------|-----|
| GOOD: | <i>ii,</i>         | <i>uresii,</i>  | <i>yorosii,</i> | <i>daizyoobu,</i>  | <i>kamawanai,</i> | ... |
|       | be good,           | be happy,       | be fine,        | all right,         | not mind          |     |
| BAD:  | <i>ikenai,</i>     | <i>dame-da,</i> | <i>iya-da,</i>  | <i>zannen-da,</i>  | <i>komaru,</i>    |     |
|       | can't go,          | be not good,    | dislike,        | be unfortunate,    | be dismayed,      |     |
|       | <i>taerarenai,</i> | ...             |                 |                    |                   |     |
|       | can't bear         |                 |                 |                    |                   |     |
| IF:   | <i>-tara,</i>      | <i>-(re)ba,</i> | <i>-to,</i>     | <i>-te (mo/wa)</i> |                   |     |

Thirdly, Kaufmann (2017) shows that adverbs like *zettai* 'absolutely' can be inserted between the conditional marker and the evaluative predicate as in *-nakereba zettai naranai* (pace Hanazono 1999).

Independently of whether CECs are lexical atoms or full-fledged bi-clausal structures, a semantic theory has to assign a suitable interpretation to these expressions. Still, the morphosyntactic status impacts the theoretical choices of how we interpret

<sup>15</sup> The conditional marker *nara* appears to constitute an exception, but see the discussion in Kaufmann (2017).

<sup>16</sup> The situation is further complicated by the fact that, in some conditional constructions, the evaluative predicate can be replaced by an interrogative (cf. (i); see Staniak (2012) for discussion):

(i) *Moo sukosi yasun-dara doo des-u ka?*  
 more a.little.bit rest-COND how COP.POL-NPST Q  
 'Why don't you rest a little more?' (lit. 'If you rested a little more, how would that be?')  
 (Staniak 2012: 91, her (93))

In some cases, the evaluative consequent can be omitted, with the conditional marker itself specifying the evaluation as either GOOD or BAD (see S. Fujii 2004).

an expression, and insights into the actual interpretation can possibly provide feedback about the morphosyntactic status. Unless an expression is fully lexicalized, formal semantic theories typically impose **compositionality** as a desideratum on the interpretation process; that is, we expect the meaning of a complex expression to be determined by the meaning of its immediate parts (and, possibly, their mode of combination).<sup>17</sup> Therefore, if CECs were shown to be interpreted in a way that cannot reasonably be related to the meanings of their (apparent) parts, we would obtain indirect evidence that they are atomic. In contrast, if their overall interpretation is compatible with what could be derived from their parts no evidence has been gained regarding their morphosyntactic nature.

Rather than providing a semantic interpretation for the constructions in question, most of the previous literature classifies CECs directly in terms of ‘obligation,’ ‘permission,’ etc., that is, in terms of the speech acts they are typically used to perform (e.g. Akatsuka 1992, Narrog 2009, S. Fujii 2004). Kaufmann (2017) argues that this association cannot be primitive but should be derived from the expression’s semantic interpretation (as for other clauses) for at least the following reasons.<sup>18</sup> Firstly, CECs are more flexible in use than what is suggested by these labels (for instance, see examples (6) and (20), and Section 4.3 for more discussion). Secondly, changes in person, the presence or absence of negation, and differences in clause type (declarative vs. interrogative) all give rise to predictable changes in functional potential. For instance, in matrix declaratives *-te mo ii* ‘it’s good also/even if’ as in (29a) is often associated with ‘permission,’ but a change from non-first to first person subject makes it more naturally interpreted as an offer (cf. (29b)). Similarly, transforming it into an interrogative turns what is naturally used as a permission into what will typically constitute a request for permission (cf. (29c)).

- (29) a. *It-te mo i-i.*  
 go-GER even/also be.good-NPST  
 lit. ‘It’s OK even/also if you go.’ (≈ ‘You may go.’)
- b. *Watasi ga it-te mo i-i des-u.*  
 I NOM go-GER also/even be.good-NPST COP.POL-NPST  
 lit. ‘It’s OK even/also if I go.’ (≈ ‘I can go,’ ‘I don’t mind going.’)  
 (Narrog 2009; Larm 2006: 217, his example)
- c. *It-te mo i-i des-u ka?*  
 go-GER even/also be.good-NPST COP.POL-NPST Q  
 lit.: ‘Is it OK even/also if (I) go?’ (≈ ‘May I go?’)

<sup>17</sup> For a discussion of compositionality in formal semantics, see Zimmermann (2011).

<sup>18</sup> S. Fujii (2004) also argues in favor of a compositional interpretation but does not herself develop one; see discussion below.



Intuitively, such effects should reduce to independently motivated changes in semantic interpretation that are explained by a theory about the interface between semantic interpretation and conversational functions. For instance, the content of a permission is typically required to describe a course of events that involves the addressee as an agent (Searle 1969), whereas propositions described with the speaker in the role of the agent can be the content of an offer. Specifying the subject as first person thus effects a change in canonical function. Moreover, (29) shows that the functional profile of CECs is affected by changes in clause-type marking: the distinction between declarative, interrogative, imperative, and possibly more sentence types is generally taken as one of the core indicators of conversational function.<sup>19</sup> Interrogative marking canonically indicates questioning and appears to be incompatible with giving permission in any direct sense.<sup>20</sup> Interrogative marking also influences what constitutes the relevant source of evaluation (see Section 6.2), and with that, (29c) is used most naturally not as a permission, but as a question about what is permissible (or possibly as a request for permission). Thirdly, associating CECs with conversational functions directly is also problematic because many of them can occur in embedded positions. Consider for instance *-te mo ii* in (30a), where it appears embedded under past tense, and (30b), where it appears in a relative clause (Larm 2006, his (158) and (160)):

- (30) a. *Kodomo no toki koohii o non-de mo*  
 child GEN time coffee ACC drink-GER even/also  
*yo-katta.*  
 be.good-PAST  
 ‘When (I) was a child I was allowed to drink coffee.’
- b. *Taka-ku hyooka-si-te mo i-i hito*  
 be.high-INF evaluate-do-GER even/also be.good-NPST person  
*da.*  
 COP.NPST  
 ‘(S/he) is a person whom one may think highly of.’

In neither of these examples does the *te mo ii*-marked sentence serve to carry out a permission; instead, it contributes a description of what was/is permissible. A functionally underspecified interpretation avoids the problems that result from a direct link to a conversational function.

The challenge is, of course, what semantic interpretation to assign. In the absence of compelling evidence for the atomic status of CECs, we assume that it is

<sup>19</sup> Bierwisch (1980) calls grammatical markers along these lines illocutionary force indicators. Some discussion of clause type marking in Japanese and its relation to modality can be found in Section 5.

<sup>20</sup> Indirect speech acts constitute an independent factor that complicates the discussion; see Searle (1975) for discussion.

obtained compositionally. Given the conditional structure of CECs, it would seem natural to apply a standard analysis of conditionals (see. Section 3). For this, we need to determine what proposition is expressed by the evaluative consequent, and it is not immediately obvious what expressions like *ii* ‘be good’ or *naranai* ‘doesn’t come about’ are predicated of. Kaufmann (2017) considers the possibility of treating them as zero-place predicates, i.e. true/false at a world simpliciter (cf. (31a)). Following Kratzer’s analysis of modality (see. Section 3), the flexibility in modal flavor of CECs (ranging over various sorts of prioritizing modality as well as circumstantial dynamic modality, and even epistemic modality in certain constructions) is captured by the contextual parameter for the accessibility relation. From standard assumptions about conditionals (cf. (26)), for a sentence like (29a) we derive that all those courses of events that (i) seem sufficiently plausible to the speaker, and (ii) are such that you go, are good according to the contextually salient modal flavor (e.g., the rules imposed by the speaker).<sup>21</sup>

- (31) a. *ii* is true at  $w$  and  $R$  iff  $\langle w, w \rangle \in R$ , for a suitable prioritizing accessibility relation  $R$ .
- b. (29a) is true at  $w$  and  $R^{\text{speaker-epi}}$  and  $R^{\text{speaker-rules}}$  iff for all  $v$  s.t.  $\langle w, v \rangle \in R^{\text{speaker-epi}}$  +you go:  $\langle v, v \rangle \in R^{\text{speaker-rules}}$ .  
(i.e., all worlds  $v$  compatible with what the speaker knows in  $w$  and at which you go are such that all the rules the speaker imposes in  $v$  are obeyed)

Kaufmann (2017) rejects this analysis based on two considerations. Firstly, (29a) can be felicitously used as a permission, even if the speaker does not rule out courses of events at which the addressee commits other ‘crimes’ and which therefore do not count as ‘good’ in the relevant sense for independent reasons. Secondly, embedding the evaluation in the conditional construal has the effect that the rules, preferences, goals, etc. taken into account are not the ones holding at the actual world of evaluation, but rather at each of the individual antecedent worlds; while this is unproblematic in a case where the relevant body of information is stable across all the worlds quantified over by the conditional (i.e., plausible enough for the speaker), it seems to make wrong predictions for cases where the addressee’s leaving somehow impacts what the rules, preferences, goals, etc. are. Both concerns carry over to alternative construals for the consequent, for instance with *ii/naranai* as a predicate of events that gets applied to the hypothetical event introduced by the antecedent. Chung (2017) suggests to build a semantics for deontic modals in general that follows the

<sup>21</sup> We are abstracting away from the contribution of *mo*. See Kobuchi-Philip (2009) for a discussion of its different usages as well as fn. 28.

structure of Japanese CEC, and sketches a way of forcing evaluation of the consequent at the actual word. Provided that certain technical issues can be overcome, this would avoid the second, but not the first problem.

Kaufmann (2017) proposes to revisit the conditional make-up of CECs: Williams (1974) observes that English conditionals like (32) appear to have two different readings as reflected in the paraphrases in (32a) and (32b).

- (32) *I would be glad if you came.*  
 a. ‘If you came I would be glad about something.’  
 b. ‘(If you came) I would be glad about the fact that you came.’

While (32a) is the standard reading obtained from any standard treatment of hypothetical conditionals, (32b) appears to use the *if*-clause twice: as the antecedent of a standard conditional, but also as filling a clausal argument position of the evaluative predicate *be glad*. The subsequent literature argues that the reading sketched in (32b) is indeed an independent one resulting from an underlyingly different syntactic structure. The construal interpreted as in (32b) is called a *non-logical conditional*. It is argued that, in such a case, the *if*-clause syntactically constitutes an argument of the evaluative predicate and patterns with other complement clauses in failing to license negative polarity items (NPIs) and allowing *wh*-extraction (Pullum 1987, Rocchi 2010, Grosz 2011). Independently of this discussion of non-logical conditionals, S. Fujii (2004) had already suggested a logical structure along these lines for Japanese CECs.<sup>22</sup> On any such theory, the antecedent has to be interpreted as a proposition or as a plurality of possible worlds (a straightforward consequence on a *referential theory* of conditional antecedents, cf. Schein 2003, Schlenker 2004), and the evaluative predicates *ii*, *naranai*, ... have to have an interpretation as predicates that apply to objects of that

<sup>22</sup> An additional complexity is encountered with the possibility-like construction *-te mo ii* (lit. ‘-GER even/also GOOD’), often translated as ‘it is good even if,’ in analogy to the use of *-te mo* to express a concessive conditional. S. Fujii (1994) emphasizes that non-evaluative conditionals of this type need not convey that the antecedent describes the most unlikely state of affairs under which the consequent is true, as would result from interpreting *mo* in the concessive sense of ‘even.’ The CEC *-te mo ii*, too, need not express that its prejacent is the most unlikely course of events to be ‘good,’ but typically involves a merely additive interpretation for *mo* similar to that in (i):

- (i) *Watasi mo paati ni ikimas-u.*  
 I also/even party GOAL go-POL-NPST  
 ‘I will also come to the party.’ [*mo*-additive]

An analysis along these lines predicts that, thanks to a presupposition of additivity, *φ-te mo ii*, unlike English *may φ*, should entail (rather than conversationally implicate) that *φ* is not necessary (and that, hence, *must φ* is false). This prediction turns out to be surprisingly hard to test and will thus be left for further research.

type (see Kaufmann 2017 for a specific implementation that avoids the two problems pointed out for an analysis as standard hypothetical conditionals).

Given a sufficiently specific theory of conversational functions (speech acts), a compositional interpretation along these lines offers a good starting point for deriving the actual functions of utterances of CECs depending on (i) various properties of the utterance context (specifically, what modal flavor is salient), and (ii) the specific content of the antecedent proposition. At the same time, this focus on a compositional semantic interpretation appears to be at odds with various aspects of conventionalization that have been observed regarding possible instantiations of Akatsuka's schema in (28) (Akatsuka 1992, 1997, S. Fujii 2004, Staniak 2012, among others). Some of them can be captured by independent properties of the different conditional markers. For instance, even in full-fledged conditionals, *-te wa* can only occur with consequents that express courses of events that are contextually evaluated as negative, as shown in (33), and similarly *-te wa* can not instantiate the schema (28) with a form of GOOD in its consequent, as shown in (34).

- (33) *Ikasi-te oi-tewa nani o syaber-are-ru ka*  
 let.live-GER leave-COND what ACC say-PASS-NPST Q  
*wakar-ana-i./ #nanika no yaku ni tat-u daroo.*  
 know-NEG-NPST/ something GEN use DAT stand-NPST TENT  
 'If we let him live, there's no telling what he might say on us/he may be useful.'  
 (Akatsuka and Sohn 1994: (1a))

- (34) *#Tabe-tewa i-i.*  
 eat-COND be.good-NPST  
 Intended meaning: 'It's good if you eat (it).' or 'You should eat (it).'

Other restrictions, however, seem to be specific to CECs. On the one hand, these regard differences in modal flavor and strength. For instance, *-te mo ii* (lit. '-GER also/even good') is typically used for permissions (deontic possibility), whereas *-te ii* (lit. '-GER good') is used for recommendations (teleological weak necessity), see Narrog (2009: 80–81). On the other hand, possible instantiations of Akatsuka's schema (28) are constrained by syntactic polarity. For instance, *ϕ-reba naranai* with the conditional marker (*re*)*ba* and the consequent *naranai* (lit. 'doesn't become') can be used to express that *ϕ* is necessary only if *ϕ* is syntactically negative. Kaufmann (2017) argues that this is a genuinely formal restriction. She compares (35) and (36) in a context where the addressee is about to draw a number and will only be able to continue the game if she draws an even number:

- (35) #*Kisuu*        *o*        *hik-eba*        *nar-ana-i*.  
 odd.number ACC draw-COND become-NEG-NPST  
 Intended meaning: ‘If you draw an odd number, it doesn’t work.’/‘You must draw an even number.’
- (36) *Guusuu*        *o*        *hik-ana-ke-reba*        *nar-ana-i*.  
 even.number ACC draw-NEG-COND become-NEG-NPST  
 ‘If you don’t draw an even number it doesn’t work.’/‘You must draw an even number.’

Intuitively, in this context, the two antecedents express the exact same proposition, which makes it hard for a functional or cognitive account to explain the difference in felicity. Relying on a more general cognitive effect of the presence of negation is problematic in view of the conditionals in the English translations of (35) and (36): while equally unidiomatic, they are equally felicitous. Kaufmann (2017) proposes to capture restrictions along these lines by arguing that all CECs involve referential *if*-antecedents. While the regular conditional marker *reba* occurring in hypothetical conditionals is neutral with respect to the contextual status of the proposition expressed by its host sentence,<sup>23</sup> there are two variants of referential conditional markers, *reba* and *naker-eba*, that are marked for positive and negative evaluation (like *tewa*), respectively. This excludes (36), which cannot contain neutral *reba* (because it is non-referential), or referential *reba* (because it is marked for positive evaluations). The grammatical CEC (36) contains referential *nakereba*, which is marked for negative evaluation and hence felicitous with a BAD predicate like *naranai*.

S. Fujii (2004) aims to account for the observed restrictions in a different way. She assumes that knowledge of Japanese is best modelled as encompassing a layer of *construction types* and *construction schemes*, which represent the conventional association of CECs with typical effects (conversational implicatures) observed with certain occurrences of full-fledged conditionals.<sup>24</sup> An account along these lines, however, faces the challenge of how exactly this additional layer interacts with the compositional semantic interpretation (see discussion above) to predict the actual infelicity of sentences like (35).

<sup>23</sup> As an example of *reba* marked for positive evaluation, consider the proverb in (i), where living in a particular place is not contextually presupposed to be positive or negative:

- (i) *Sum-eba*                      *miyako*.  
 live(there)-COND capital  
 ‘The capital/best place is where(ever) you live.’

<sup>24</sup> S. Fujii (2004) argues that her account can also capture the existence of *reduced CECs*, that is, instantiations of (28) in which the evaluative predicate is omitted but is interpreted reliably as either GOOD or BAD. A systematic discussion of when this is possible can be found in Larm (2006).

Other aspects about systematic gaps in the paradigm of actually occurring CECs remain equally mysterious from the perspective of formal semantics and from the perspective of construction grammar approach. For instance, in contrast to the productive use of concessive conditional-like constructions to convey possibility (*-te mo ii* ‘even/also if’), there is no systematic use of ‘only if’-conditionals to convey necessity.<sup>25</sup>

- (37) *Nakama to kyooryoku-si-te koso/(?)nomi/?dake seikoo-deki-ru.*  
 partner COM cooperate-do-GER precisely/only/only succeed-POT-NPST  
 ‘You will succeed only if you cooperate with your partners.’
- (38) \**Atarasi-i kuruma o kat-te koso/nomi/dake nar-u/*  
 be.new-NPST car ACC buy-GER precisely/only/only become-NPST/  
*i-i.*  
 be.good-NPST  
 Intended: ‘It is/will be good only if you buy a new car.’/‘You must/should buy a new car.’

Another problematic aspect is an asymmetry in what modal flavors are expressed by conditional constructions to begin with: while some of the constructions discussed in this section seem to have epistemic readings in addition to their prioritizing and the more marginal dynamic ones (see Section 4.3), the markers that are typically discussed as expressing epistemic modality are non-conditional (*daroo*, *hazu*, and *kamosirenai*, see Section 2). It is, however, perfectly conceivable to express the notion

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<sup>25</sup> ‘Only if’ conditionals are often expressed more naturally with a temporal connective *toki*. These constructions cannot serve as the basis of CECs, either.

- (i) *Kanozyo wa tasuke-te hosi-i toki {dake, nomi} denwa o*  
 she TOP help-GER want.NPST time only phone ACC  
*kake-te ku-ru.*  
 call-GER come-NPST  
 ‘She calls (me) only if she wants help.’
- (ii) \**Atarasi-i kuruma o ka-u {toki, baai} {nomi, dake}*  
 be.new-NPST car ACC buy-NPST {time, case} only  
 {*nar-u, i-i*}  
 {become-NPST, be.good-NPST}  
 Intended meaning: ‘It is/will be good only if you buy a new car.’/‘You must/should buy a new car.’

Interestingly, Korean expresses necessity along the lines of (38) (see Takubo 2006, Ch. 1), which suggests that this is an accidental gap of Japanese (we are indebted to an anonymous reviewer for pointing this out to us).

of something being an epistemic possibility (roughly equivalent in meaning to *kamo-sirenai* ‘maybe’) by saying that it is unsurprising if it occurs. And, in fact, (39) is not entirely unidiomatic.

- (39) *Ame ga hut-te mo okasiku-na-i.*  
 rain NOM fall-GER also/even be.strange-NEG-NPST  
 ‘It’s not strange if it rains.’ (≈: ‘It might rain.’)

Still, *-te mo okasikunai* is not normally discussed as an expression of epistemic modality, which has to be motivated by independent criteria of grammaticalization (see Narrog 2012). It remains to be seen to what degree formal approaches to natural language semantics (or generative grammars, more generally) can make room for restrictions that do not pertain to fixed, semantically opaque sequences (idioms), as well as for patterns in what constructions become conventionalized in the aforementioned sense to begin with. Japanese CECs offer themselves as testing grounds for this enterprise.

### 4.3 Specifically flavored

In contrast to the flexibility in modal flavor that modal expressions of the Indo-European languages are known for, the modal expressions of Japanese tend to be restricted to only epistemic or only prioritizing or only dynamic flavors. At the same time, just like the Indo-European ones, Japanese modal expressions are lexically specified for modal force, which distinguishes Japanese from languages like Salish with modals that are lexically specified for modal flavor but are variable in modal force (Rullmann, Matthewson, and Davis 2008).

Flexibility in modal flavor was more widespread at earlier stages of Japanese: some expressions have lost readings available to them at earlier stages. For example, the precursors *besi* of *beki* (now exclusively deontic) and *-mu* of exhortative *-(y)oo* (now exclusively prioritizing) both had epistemic readings in Old Japanese, and for *-(y)oo*, epistemic uses are still to be found in early Modern Japanese (Horie 1997).<sup>26</sup>

It is disputed to what extent, if at all, any of the modern Japanese modal markers can be used across modal flavors. Adverbial expressions like *kanarazu* ‘necessarily, by all means’ can occur both with epistemic and non-epistemic modals. However, they seem to be unable to express modal notions by themselves, and rely on a co-occurring modal expression as listed in Section 2 (see. Narrog 2009: 75). Among those that are

<sup>26</sup> Moriya and Horie (2009: fn. 5) point out that *beki* has an adnominal use in which it still allows for both deontic and epistemic usages, as in *kuru beki hito* ‘a person who (morally) should come’ or ‘a person who is (epistemically) supposed to come.’

considered genuinely modal, the primarily epistemic marker *hazu da* has uses that suggest an analysis in terms of deontic modality (see Narrog 2009 for discussion). Moreover, as we have already seen in Section 2, while predominantly prioritizing, the CECs *-nakereba naranai* and *-nakute wa naranai* can also express dynamic modality. They have, in addition, been claimed to marginally express epistemic modality. Yet, intuitions are not entirely clear-cut. An example from Narrog (2008) (his (24)) is given in (40).

- (40) *Daawin sinkaron ga zettaiteki-ni tadasi-i to*  
 Darwin evolution.theory NOM absolutely be.right-NPST COMP  
*su-ru-nara, sinka wa ima sinkoo-tyuu de-na-kereba*  
 assume-NPST-COND evolution TOP now progress-during COP-NEG-COND  
*nar-ana-i.*  
 become-NEG-NPST  
 ‘If Darwin’s theory of evolution is absolutely right, then evolution must be in progress now.’

While some of the putatively epistemic examples with *-nakereba naranai* could also be analyzed as involving circumstantial necessity, this is hard to maintain for (40), which suggests that *must* depends on the contents of Darwin’s theory (together with the assumption that it is correct). The contents of a theory constitute an epistemic and not a circumstantial conversational background.<sup>27</sup>

The only markers that seem to uncontroversially express both prioritizing and epistemic notions in themselves in modern Japanese are the CECs *-te wa ikenai* and *-te mo ii*. In addition to their more widely known prioritizing or dynamic uses, Larm (2006) cites and confirms the following examples from Nihongo Kijutsu Bunpō Kenkyūkai (2003):

- (41) *Ni-zikan mae ni syuppatu-si-ta no nara, moo*  
 two-hours before TMP depart-do-PST NMLZ COND already  
*tootyaku-si-tei-naku-te wa ik-e-na-i.*  
 arrive-RES-do-NEG-GER TOP go-POT-NEG-NPST  
 ‘If (s/he) departed two hours ago, then (s/he) must have arrived by now.’  
 (Larm 2006: 210, his (110))

<sup>27</sup> A good test, of course, would be to replace *nakereba naranai* in (40) with a marker like *zaruena* that unambiguously selects for circumstantial and not epistemic necessity and to see if the reading remains the same. Unfortunately, *zaruena* requires the presence of a lexical verb and cannot be used with a nominal form such as *sinkoo tyuu*. Yutaka Ohno (p.c. to first author) points out that translating English scientific texts into Japanese might have influenced this use of *-nakereba naranai*.



- (42) *Tanaka san wa, ni-zikan mae ni ie o*  
 Tanaka Mr. TOP two-hours before TMP house ACC  
*de-tei-ru soo-dakara sorosoro kotira ni*  
 leave-RES-NPST EVID-because soon here GOAL  
*tootyaku-{si-te mo i-i, su-ru kamosirena-i}*.  
 arrive-do-GER also/even be.good-NPST, do-NPST may-NPST  
 'I hear that Mr Tanaka left the house two hours ago, so he may be here soon.'

According to Nihongo Kijutsu Bunpō Kenkyūkai (2003) and Larm (2006), *ikenai* in (41) can be replaced by *naranai* but not the more colloquial *dame da* 'it's no good'. The felicitous variants are reported to express a notion similar to *hazu da*. For (42), *-te mo ii* is considered similar to epistemic *kamosirenai* (Larm 2006: 217).

To the best of our knowledge, a satisfactory account for the crosslinguistic presence or absence of polyfunctionality across the boundaries of epistemic, prioritizing and dynamic modality remains to be developed. Yet it is suggestive to relate the situation in Japanese to the heavy use of largely semantically transparent complex constructions, and one might predict that, with semantic bleaching occurring as grammaticalization progresses, the dividing line between the three main types of modal flavors would get weakened. The present status of the most conventionalized CECs *-nakereba naranai* (possibly in contrast to *-nakereba dame*), *-te mo ii*, and *-te wa ikenai*, with their relatively unspecified evaluative predicates might constitute evidence in favor of such a development (see Moriya and Horie 2009 for considerations along these lines).

#### 4.4 Fine-tuning modal force: weak and strong necessity

The standard version of Kratzer's theory of modality as introduced in Section 3 above distinguishes possibility and necessity modals and accounts for their different behavior in conjunctions with contradictory prejacentes.

- (43) a. *You can/may leave, and you can/may stay.*  
 b. *#You have to/must/should/ought leave, and you have to/must/should/ought stay.*

By this test, *nitigainai*, *hazu-da*, *beki* and *-nakereba naranai* can be categorized as expressing necessity, whereas *kamosirenai* expresses possibility.<sup>28</sup> Still, as described informally in Section 2, even for a given modal flavor, single expressions with one and

<sup>28</sup> An independent complication arises for *daroo*, which cannot be embedded under a conjunction marker. The equivalent of the conjunction test for *-te mo ii*, which was argued to be a transparently evaluative construction, would be as in (i), following the pattern of regular alternative concessive conditionals like (ii) from S. Fujii (1994):

the same modal force differ considerably. Building on von Fintel and Iatridou (2008), the recent formal semantic literature contrasts specifically *weak necessity modals* (like *ought* and *should*) with *strong necessity modals* (like *must* and *have to*). The distinction in strength is motivated by two types of contrasts. Firstly, strong necessity modals can reinforce weak ones, but not the other way round (cf. (44)). Secondly, weak necessity modals are compatible with the negation of strong necessity modals, but not the other way around (cf. (45a) vs. (45b)).

- (44) a. *You ought to wash your hands – in fact, you have to.*  
       b. ??*You have to wash your hands – in fact, you ought to.*  
               (von Fintel and Iatridou 2008, their (5a, b))
- (45) a. *You ought to do the dishes but you don't have to.*  
               (von Fintel and Iatridou 2008, their (3))  
       b. ??*You have to do the dishes but it's not the case that you ought to.*

The literature on Japanese modals suggests that a similar contrast obtains between *beki da* and *-nakereba naranai/ikenai* in the deontic domain, and *hazu da* and *niti-gainai* in the epistemic domain (see Larm 2006, Narrog 2009). A contrast similar to (44) is illustrated in (46), where what is considered as best (*beki*) for all students in the speaker's university is called necessary for the students majoring in linguistics (*-nakereba naranai*); exchanging the modals or using the same modal in both conjuncts would result in an infelicitous sequence.<sup>29</sup>

- (46) *Uti no gakusei wa mina 3-tu izyoo no gaikokugo*  
       we GEN student TOP all 3-CLF above GEN foreign.language  
       *o benkyoo-su-ru beki-da ga, gengogaku senkoo no*  
       ACC study-do-NPST ought-COP.NPST but linguistics major GEN  
       *gakusei wa 3-tu izyoo benkyoo-si-na-kereba nar-ana-i.*  
       student TOP 3-CLF above study-do-NEG-COND become-NEG-NPST  
       'All our students should study three or more foreign languages, but lin-  
       guistics major students have to study three or more.'

- (i) *Tabe-te mo tabe-naku-te mo i-i.*  
       eat-GER also/even eat-NEG-GER also/even be.good-NPST.  
       'Whether or not you eat it, it's OK/good.' (roughly: 'You can eat it and you can also not eat it.')
- (ii) *Nai-te mo warat-te mo happyoo made ato iti-niti-da.*  
       cry-GER also/even laugh-GER also/even presentation until more one-day-COP.NPST  
       'Whether (you) cry or laugh, there is only one day left before the presentation.' (her (7))

<sup>29</sup> Related contrasts concerning *beki* and *hoo ga ii* are noted in so far unpublished work by Carla Di-Girolamo (p.c. with first author). Note, however, that not all native speakers find the sequence in (46) fully natural without additional material to make explicit the difference in strength.

In the epistemic realm, Okano and Mori (2014) observe that *hazu* patterns with the weak necessity modal *should* rather than the strong necessity modals *must* or *have to* in allowing for the preajcent to be false (see Copley 2005 for discussion of the English data).

(47) *The beer {should, #has to, #must} be cold by now, but it isn't.*

(48) *Biiru wa imagero hie-tei-ru {hazu-da,*  
 beer TOP by.now get.cold-RES-NPST should-COP.NPST,  
*#nitigaina-i} ga hie-tei-na-i.*  
 must-NPST but get.cold-RES-NEG-NPST  
 'The beer should/#must be cold by now, but it isn't.'  
 (Okano and Mori 2014, their 2)

Further research will be needed to determine the extent of the parallelism.<sup>30</sup> From a theoretical perspective, the distinction between weak and strong modality is subject to on-going research (see von Fintel and Iatridou 2008, Lassiter 2011, Rubinstein 2012, Portner and Rubinstein 2016, among others.).<sup>31</sup>

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**30** Note for instance (i) from Narrog (2009: his (91)), which displays a use of *hazu da* that is impossible for weak necessity modals in English:

(i) *Zenkai no toki ni okotowari-si-te oi-ta hazu yo.*  
 last.time GEN time TMP decline.HUM-do-GER put-PST should SFP  
*Kekkon-aite gurai zibun-de mituke-ru.*  
 marriage-partner extent by.oneself find-NPST  
 'I presume I (already) declined the other day. I can find a partner for marriage by myself.'

Narrog observes that 'For the speaker, it is a fact that she declined to be introduced to prospective marriage partners. She only rhetorically presents this as a supposition.' (Narrog 2009: 102) Neither *ought* nor *should* can be used in this way.

**31** Interestingly, not all sequences that appear to instantiate inverse patterns of (47) are infelicitous:

(i) *Taberu mae ni wa te o araw-ana-kereba nar-ana-i si,*  
 eat-NPST before TMP TOP hand ACC wash-NEG-COND become-NEG-NPST and  
*ara-u beki-da.*  
 wash-NPST ought-COP.NPST  
 'We have to wash our hands before we eat, and we should.'

Examples along these lines seem to be at least marginally acceptable in English as well, suggesting that the parallels drawn between the English and Japanese expressions are correct, but that more work is required to understand and model the contrast between weak and strong necessity. For *beki* vs. *-nakereba naranai*, Nihongo Kizyutu Bunpoo Kenkyukai (2003) and Narrog (2009: 82–84) describe the difference as necessity according to 'objective rules or laws' in contrast to necessity according to

## 5 Modality and clause types

### 5.1 Theories of clause types

Defining ‘modality’ as the category of grammatical markers that express displacement from the actual situation raises the question of how the notion relates to sentential mood (or, sentence types) and the morphological markers that indicate sentential mood. Sadock and Zwicky (1985) understand sentence types as sentential form types that are conventionally associated with a particular speech act type. They observe that languages tend to distinguish *declaratives* (canonically used for assertions), *interrogatives* (canonically used for questions), and *imperatives* (canonically used to ‘indicate the speaker’s desire to influence future events’), and that many languages mark additional minor types.<sup>32</sup> Studies that define modality as the class of expressions and constructions that convey the speaker’s attitude to the propositional content expressed by an utterance typically include a discussion of sentence types. In contrast, the formal semantic literature tends to treat modality as part of the propositional content expressed by an utterance. Differences in sentence type are reflected either at a separate layer of conventional meaning (e.g., Stenius 1967, Bierwisch 1980), or else amount to a type-theoretical distinction (e.g., Hamblin 1973 identifies the denotation of an interrogative clause with the set of propositions that constitute possible answers). Imperatives have recently been argued to belong to modality proper, in that a modal operator similar to *must* or *should* is responsible for their conventional link to directive speech acts (Han 1999, Schwager 2006, Grosz 2009, Medeiros 2013, among others; see Portner 2007 for a non-modal alternative). The minor clause types of optatives and exhortatives have received less attention but might be similarly related to subtypes of prioritizing modality. The relation between sentence types and modality is particularly complicated in Japanese, which does not display a formally uniform system of clause types. In the following, we will briefly consider imperative clauses and exhortatives.<sup>33</sup>

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preferences or views of the speaker. Yanovich (2014) reaches a similar conclusion: building on English and East Slavic data, he argues that the distinction between weak and strong necessity should be captured as a distinction in what modal flavors an element can combine with.

**32** In an actual conversation, expressions of any form type can be used for basically any function. It needs to be determined if all of the non-canonical cases should be explained as Searlean indirect speech acts (Sadock and Zwicky 1985), or if some of them can be derived from a functionally underspecified layer of semantic meaning (Portner 2007, Kaufmann 2012).

**33** Another construction that merits investigation in this connection but has to await future research is the optative *yoo ni*. For a recent treatment of optative clauses in formal semantics, see Grosz (2011).

## 5.2 Imperative clauses

We use ‘imperative markers’ to refer to verbal morphology or particles that mark a clause as belonging to the imperative clause type of a given language, that is, a sentence form, whose canonical use is to command or order (Sadock and Zwicky 1985).<sup>34</sup> In Japanese, the inflectional ending *-e* (with allomorphs *-yo/-ro* depending on verbal inflection class), *-nasai*, and *-te kudasai* can be considered subtypes of the imperative clause type. These differ slightly in canonical function: *e/yo/ro* is used for direct commands, *nasai* is used with children and for giving instructions, and *-te kudasai* is used for polite requests.

- (49) *Kono hon o* [(a) *yom-e/* (b) *yomi-nasai/* (c) *yon-de kudasai.*]  
 this book ACC read-IMP/ read-HON.IMP/ read-GER please  
 ‘(Please) read this book.’ [(a) direct (b) instruction/ (c) polite request]  
 command/

Like many imperative markers of other languages, *e/yo/ro* and *nasai* do not co-occur with sentential negation, instead, in the plain style, the non-past form followed by *na* is used for negative commands, as in (50). In contrast, the polite construction *-te kudasai* can be formed from the negated form of the verb as well, as in (51).

- (50) *Kono hon o yom-u na!*  
 this book ACC read-NPST NEG.IMP  
 ‘Don’t read this book.’
- (51) *Kono hon o yom-anai-de kudasai.*  
 this book ACC read-NEG-GER please  
 ‘Please don’t read this book.’

In line with a cross-linguistically stable generalization (Han 2000), the semantic contribution of the imperative marking cannot appear in the semantic scope of clause-mate negation: (50) and (51) express orders, requests, advice, etc. to not act in the way described.

As in many other languages, the subject of Japanese imperatives can be realized by a second person pronoun or be left out, resulting only in a difference in information structure. Like in German or English, subjects other than second person are generally ungrammatical (Nitta 1991: 241, Narrog 2009: 1999), unless they can be construed as quantifiers over a plural addressee (see Zanuttini 2008, Kaufmann 2012). Specific to Japanese, proper names referring to the addressee are acceptable as sub-

<sup>34</sup> For further discussion of Japanese imperatives see also Davis (2011) and Svahn (2016).

jects (note that, unlike in the English translation, they do not constitute vocatives). These findings support the assumption that whatever is responsible for imperative meaning combines with a propositional preajacent.

- (52) a. *Omae ga/ \*kare ga ugok-e.*  
 you NOM/ he NOM move-IMP  
 ‘YOU move.’/ Intended meaning: ‘HE move’
- b. *Dareka/ Minna/ Takesi ga ugok-e.*  
 someone/ everyone/ Takeshi NOM move-IMP  
 ‘Somebody/everybody/you, Takeshi, move!’
- c. *Daremo ugok-u na.*  
 anyone move-NPST NEG.IMP  
 [lit.] “Don’t anybody move!” = ‘Nobody move!’

As in other languages, depending on issues of politeness, imperatives can be used naturally (and without signs of indirectness, see Kaufmann 2012 for discussion) for a variety of speech acts other than orders or commands as well. A series of different accounts in the recent formal literature tend to capture this in terms of the relation between imperative clauses and modality: imperative clauses either express modalized propositions similar to ‘You should  $\phi$ ’ (see Kaufmann 2012 for details), or update the parameters with respect to which a subsequent prioritizing modal is interpreted (Portner 2007). This means that, in addition to deontic modality, they can also express teleological or bouletic modality, as long as such a modal flavor is considered to guide the addressee’s choice of action or express the speaker’s wishes (Kaufmann 2012). While imperatives invariably express that their preajacent is true in the best courses of events according to the respective modal flavor, their use for instructions or advice shows that the speaker need not have an actual desire for this to come about.

- (53) A: *How do I get to the station?*  
 B: *Take bus number 17.*

On their more canonical uses, imperatives require the addressee to have control over the state of affairs described in the preajacent. Imperatives of non-agentive predicates are consequently marked. In English, they are acceptable in contexts of coercion (e.g. *Be blond!* in the sense of ‘see to it that your hair is blond (for a specific occasion)’ or as wishes uttered in soliloquy (imagining a specific addressee). Also, imperatives from stativized predicates are fine if a specific reference time is salient or indicated overtly (see the chapters in Section III of this volume for the semantics of tense). In Japanese, these pragmatic restrictions on imperatives of stative predicates are reflected more strongly in actual grammatical restrictions: imperatives cannot be formed from stative predicates other than *iru* ‘(animate) to be, to exist.’ When avail-

able, stative imperatives behave similarly to their counterparts in English: (54) provides an example of an imperative used in a soliloquy, and (55) is a case where the reference time is specified explicitly:

- (54) *Kono heya ni i-ro/ i-nasai/ i-te kudasai.*  
 this room LOC be-IMP/ be-HON.IMP/ be-GER please  
 ‘Please be in this room!’ (hoping that the missing sister has returned and will be in her room)<sup>35</sup>

- (55) *Zyoosi ga tootyaku-su-ru toki wa genkan de*  
 boss NOM arrive-do-NPST time TOP entrance LOC  
*mat-tei-ro/tei-nasai.*  
 wait-PROG-IMP/PROG-HON.IMP  
 ‘Be waiting in the entrance when your boss arrives.’

Many languages impose strong restrictions on imperatives in embedded contexts (to the point of banning them altogether), but Japanese allows imperative markers in *to*-marked complements of speech reporting predicates. While *to* can, in principle, introduce either direct speech (quotational constructions) or indirect speech, Kuno (1988) adduces examples like (56) (his (4.1)), where the interpretation of pronouns like *kanozō* ‘her’ allows one to exclude the direct speech construal:

- (56) *Hanako ga [kanozō no ie ni sugu ko-i]*  
 Hanako NOM her GEN house GOAL immediately come-IMP  
*to denwa o kake-te ki-ta.*  
 QUOT telephone.call ACC place-GER come-PST  
 ‘Hanako called me and said that I should come to her house immediately.’

Kuno regards such examples as instances of ‘blended discourse’ that integrate quotational pieces into an indirect speech complement. But as Kuno himself acknowledges, even the allegedly quotational parts need not be literal quotes and are, for instance, subject to the ban on polite verbal forms from embedded clauses. In view of this and in line with more recent findings of embedded imperatives in other languages, the relevant constructions are now generally considered bona fide examples of indirect speech (Oshima 2006, Schwager 2006, T. Fujii 2006, M. Saito 2012, H. Saito 2016, Kaufmann 2012).<sup>36</sup>

<sup>35</sup> Our Japanese rendering of the English original as occurring in Mary Higgins-Clark’s novel *Daddy’s Girl*.

<sup>36</sup> Masahiro Yamada (p.c. to first author) points out that Japanese might also allow for embedded imperatives in certain types of relative clauses:

### 5.3 Exhortative clauses

Predicates carrying the verbal affix *-(y)oo* (attaching to both the plain and the polite form) are generally considered to mark the sentential form of an exhortative clause. They are canonically used in suggestions for joint action.

- (57) a. *Asita kaimono ni ik-oo.*  
 tomorrow shopping DAT go-COHORT  
 ‘Let’s go shopping tomorrow.’
- b. *Maturi de wa kimono o ki-yoo.*  
 festival LOC TOP kimono ACC wear-COHORT  
 ‘Let’s wear kimono at the festival.’

Under particular pragmatic conditions, *-(y)oo* can also be used to express one’s willingness to do something for the benefit of the addressee. Therefore, the form is sometimes considered ambiguous between exhortative and the cross-linguistically rare promissive:

- (58) *Obasan otetudai-si-mas-yoo.*  
 Auntie help.HUM-do-POL-COHORT  
 ‘Auntie, let me help you!’  
 (Higuchi 1992: 182)

Narrog (2009: 154–155) argues that such examples are pragmatically marked and should thus not be seen as evidence in favor of a genuine promissive reading. Interestingly, *-(y)oo* can occur in indirect speech and alternates there between an intensitive and an exhortative reading depending only on the syntactic and semantic properties of the embedding construction (T. Fujii 2006, his (15b, c)).

- 
- (i) *kanarazu yom-e teki-na hon*  
 certainly read-IMP kind.of book  
 ‘the kind of book you must certainly read’
- (ii) *kanarazu yom-e mitai-na hon*  
 certainly read-IMP like book  
 ‘the kind of book you should certainly read’

Imperatives embedded in restrictive relative clauses are crosslinguistically rare (see Medeiros 2013 for instances in Ancient Greek and Stegovec & Kaufmann 2015 for Slovenian). H. Saito (2017) analyzes Japanese cases like (i, ii) as forms of speech reports.



- (59) *Yooko wa boku no beeguru o tabe-yoo to*  
 Yoko TOP I GEN bagel ACC eat-COHORT COMP  
*keikaku-si-ta (yoo-da)*  
 plan-do-PST EVID-COP.NPST  
 ‘(It seems that) Yoko planned to eat my bagel.’
- (60) *Yooko wa Hiroshi ni boku no beeguru o tabe-yoo*  
 Yoko TOP Hiroshi DAT I GEN bagel ACC eat-COHORT  
*to teian-si-ta (yoo-da)*  
 COMP propose-do-PST EVID-COP.NPST  
 ‘(It seems that) Yoko proposed to Hiroshi that they eat my bagel.’

In line with modal theories of imperatives, this behavior of *-(y)oo* could be taken to indicate that it expresses a more general notion of necessity according to a modal flavor that reflects the joint interests of speaker and hearer. This assumption might shed light on a crucial difference between imperatives and exhortatives: the latter, but not the former, can appear in the scope of the interrogative particle *ka* to express suggestions that await confirmation, as in (61). Semantically, A’s utterance can be treated as a polar question about whether it is best for the group of conversational participants to follow a certain course of events or not, which results compositionally from the interrogative marker outscoping a suitably flavored necessity modal.

- (61) A: *Tabemas-yoo ka?* B: *Hai, tabemas-yoo.*  
 eat-POL-COHORT Q yes, eat-POL-COHORT  
 A: ‘Shall we eat?’ B: ‘Yes, let’s eat.’

While the embedding of *-(y)oo* under the interrogative particle *ka* can be taken to indicate lack of subjectivity, on the view sketched below, the particular modal flavor *-(y)oo* expresses is subjective after all: it expresses an evaluation in view of the joint preferences or goals of speaker and hearer, either in the actual utterance context or in a context introduced by a *verbum dicendi* (see Section 6).

## 6 The notion of subjectivity

### 6.1 Pragmatic versus lexico-grammatical conception

Works in Japanese linguistics as well as general cognitive and functional studies of modality have long drawn attention to a cluster of phenomena that the formal semantic frameworks introduced in Section 3 have turned to only recently. The phenomena in question are generally subsumed under the notions of *subjectivity* and/or *per-*

*formativity*, and relate to the observation that certain modal expressions ‘subjectively express the speaker’s state of mind at the time of the utterance’ (Kindaichi 1953, translation by Larm 2009: 62) or ‘serve the ‘locutionary agent’s (the speaker’s or writer’s, the utterer’s) expression of himself or herself in the act of utterance’ (Lyons 1995: 337). This is often related to Austin’s (1962) notion of performative utterances as opposed to constative ones (Verstraete 2001, Larm 2009). While the phenomenon as such is broadly acknowledged (as well as the assumption that it eludes a purely truth-conditional explanation), there is considerable disagreement about a scientifically viable definition; intuitions also differ widely on whether subjectivity should be contrasted with objectivity, intersubjectivity, or both (see for instance Nuyts 2012, Portner 2009: 122-129, Narrog 2012: 23-46). Authors disagree moreover on whether the distinction is to be drawn between linguistic expressions (the *strict lexico-grammatical conception*, e. g. Kindaichi 1953, Larm 2009, Langacker 1985, 2002) or between occurrences of linguistic expressions (the *pragmatic conception*, Traugott and Dasher 2002, Lyons 1977). For example, on the pragmatic view, *-te mo ii* is subjective in (62), but not in (63); on the strict lexico-grammatical conception, examples like (63) (from Larm 2006, his (158)) prove that *-te mo ii* is not subjective.<sup>37</sup>

- (62) *Tabe-te mo i-i des-u yo.*  
 eat-GER also/even be.good-NPST COP.POL-NPST SFP  
 ‘It’s all right if you eat (it)’/‘You can eat (it)!’

- (63) *Kodomo no toki kooiii o non-de mo yokat-ta.*  
 child GEN time coffee ACC drink-GER also/even be.good-PAST  
 ‘When (I) was I child I was allowed to drink coffee.’

In view of such findings, more recent proponents of the strict lexico-grammatical position maintain that subjectivity is a graded concept, and can be defined by a series of grammatical properties which an expression may exemplify only partially. For Japanese, Larm (2006, 2009) builds on Kindaichi’s work to determine which of the categories of *Maximum*, *High*, *Intermediate*, *Low*, or *Zero Subjectivity* a modal marker belongs to. He employs the following criteria: inability to occur (i) in the scope of past tense, (ii) in the scope of negation, (iii) in an adnominalization, (iv) in the scope of an objective modal, (v) in the antecedent of a conditional, (vi) under an attitude predicate like *know*, (vii) under *node* ‘because,’ and (viii) in a question construction; moreover (ix) subjective modality may be expressed only once (although possibly in more than

<sup>37</sup> Advocates of the strict lexico-grammatical position could assume that the construction (or a relevant part of it, depending on its morphosyntactic status, see Section 2.2) is ambiguous. This would result in a most likely unmotivated proliferation of ambiguity and it would call for a theory of what constrains the respective appearances of self-expressing and non-self-expressing variants.

one place, Lyons 1977: 808).<sup>38</sup> For Larm, subjectivity is a matter of degree in that a given element may come with only a subset of these properties, and he points out that a characterization along these lines relies on specific criteria rather than the researcher's impression. While we fully agree with Larm in the last respect, this graded lexico-grammatical approach is not unproblematic, either. First of all, it is not entirely clear if scope is understood semantically or syntactically – while these two coincide for the compositional interpretation of regular truth-conditional at-issue meaning (at least if an abstract syntactic representation possibly different from the surface order is assumed), the two notions of scope can easily come apart for other layers of conventional meaning. Consider specifically expressive meaning as conveyed by the English noun *bastard*. The negative evaluation conveyed is subjective in the sense that it is a self-expression of the speaker in the here and now of the utterance, but it can be freely embedded in arbitrary syntactic depth, as in (64):

- (64) a. *If that bastard shows up here once more, I'll call the police.*  
 b. *I haven't seen that bastard in a long time.*

So, expressions like *bastard* can occur for instance in the antecedents of conditionals or under tense and negation, but contribute expressive meaning that semantically and/or pragmatically 'escapes' the morphosyntactically encoded embedding construction.<sup>39</sup> Secondly, as evidenced in the above discussion of imperatives and exhortatives (see Section 5), not even the markers with maximum subjectivity display the full-range of subjectivity properties (independently of whether 'scope' is understood syntactically or semantically): both can appear in speech reports, exhortative *-(y)oo* can occur in interrogatives, and imperatives may be able to occur in relative clauses (see fn. 36). Thirdly, in order for it to be fully satisfactory, one would want to know if the division into five classes of subjectivity follows an implicational hierarchy, and if so, whether one level of subjectivity, that is, a particular selection of these nine properties, corresponds to a single underlying property shared by the items in that class. Fourthly, the gradable notion fails to shed light on the observation that many expressions identified as having zero or low subjectivity (e. g., *-te mo ii*) still display a strong tendency for being anchored to the perspective of the speaker in matrix declaratives (compare the behavior of items like English *must* as discussed in Section 6.2).

<sup>38</sup> Larm's classification is a more fine-grained version of Hengeveld's (1988), who relies on (i,ii,v,viii) in addition to 'the possibility of questioning the source of modal judgment' (see Narrog 2012: 31–32 for discussion).

<sup>39</sup> Potts (2005) treats such aspects of conventionally encoded meaning as *conventional implicatures* and offers a compositional treatment on a layer parallel to the regular at-issue meaning; see also Tonhauser et al. (2013) for a general discussion of *projective meaning*.

The pragmatic account avoids many of the issues that remain problematic for the graded lexico-grammatical position. However, in its strict form, it fails to explain why expressions differ in what contexts allow for them to be used non-subjectively, and why certain expressions seem to resist non-subjective interpretations categorically.

We conclude that the actual subjective or non-subjective use of an expression results from an interplay between its conventional meaning and the conversational settings (similarly to Narrog 2012) and that an expression's tendency to be used subjectively or non-subjectively in particular linguistic and non-linguistic contexts has to be explained in terms of its conventional meaning. Additionally, items may come with syntactic restrictions on possible contexts of embedding. As it stands, this suggests genuine independence between syntactic and semantic restrictions, which fails to reflect obvious connections: markers that tend to be used subjectively in unembedded contexts are often subject to restrictions against embedding (e.g., imperatives, exhortatives, Japanese *daroo*, English *might*), but not all of them are (cf. (64)). Formal theories of the syntax-semantics interface aim to identify linguistic structures that both account for the syntactic restrictions and encode the aspects of subjectivity observed with the items in question (see Section 6.3).

## 6.2 Subjectivity effects relating to modals from the formal semantic perspective

In view of the findings in the previous section, we maintain that there is an aspect to Lyon's classification of 'subjectivity' as self-expression of the speaker in the here and now of the utterance that has to be understood at the lexico-grammatical level, but also that existing lexico-grammatical theories of subjectivity are not entirely satisfactory. Instead, we will advocate the following *weak lexico-grammatical understanding of subjectivity*:

- (65) Subjectivity is a property of a linguistic expression  $\alpha$  (a lexical item or a construction) such that the default meaning or use of the expression in syntactically unembedded position cannot be captured correctly without making reference to the speaker in his/her actual here and now,<sup>40</sup> and such that  $\alpha$  displays *some sort of obstinacy* against this dependence being manipulated, where manipulation is either (i) pragmatic, through changes in the contextual setting of the utterance, or (ii) grammatical, through syntactic embedding under a scope-taking operator.<sup>41</sup>

<sup>40</sup> See Zimmermann (2012) for standard conceptions of the utterance context.

<sup>41</sup> Note that we are using 'manipulated' rather than the more intuitive 'shifted' in order for the definition to extend to negation.

This definition is kept deliberately general to cover what we take to be a range of underlyingly different phenomena that all fall under Lyon's characterization. Such phenomena may, however, have quite different properties and may thus require quite different analyses.<sup>42</sup> 'Some sort of obstinacy' is meant as a cover term for a range of phenomena discussed in the literature (see below for specific examples); obstinacy against grammatical manipulation, in particular, covers both restrictions against an expression's appearance in the syntactic scope of other expressions *and* effects of non-local interpretation (*projective meaning* as evidenced above for conventional implicatures, as in (64)). The definition leaves room for discussion as to whether or not a particular phenomenon constitutes 'obstinacy' in the relevant sense, but we are positive that there are enough clear-cut cases to get the discussion started. Finally, it may be worth pointing out that subjectivity thus understood does not require a positively defined counterpart – expressions simply do not have the property if (i) their meaning can be captured without reference to speaker/here/now of the actual conversation, and if (ii) in arbitrary depths of syntactic embedding, they interact with their linguistic context according to standard assumptions of compositional semantics. While our definition remains silent as to whether subjectivity has to be encoded syntactically, classes of items in which it systematically co-occurs with restrictions against syntactic embedding strongly suggest a treatment in terms of structural properties (e. g., Speas and Tenny 2003, Truckenbrodt 2006, see also Section 6.3).

Work in formal semantics oftentimes does not address the issue of subjectivity as such, but there is a considerable body of literature that addresses specific linguistic phenomena pertaining to modality (in Japanese and elsewhere) that are related more or less directly to subjectivity along the lines of (65). A common insight from all these discussions is that propositional meaning alone fails to capture specifics of discourse behavior and an inherent notion of *perspective*.

Consider first the work on modal verbs and adverbials in Indo-European languages. According to the Kratzer-style framework as outlined in Section 3, we would expect for these to be interpreted with respect to arbitrary conversational backgrounds, thus reflecting the beliefs of the speaker or of any other salient individual, or, for deontic modality, the rules or goals of the speaker as well as of any other individual. There are, however, systematic restrictions correlating closely with what we have called subjectivity (see Kratzer 1981, Portner 2009). Epistemic modals occurring in main clause declaratives, for instance, will normally relate to the belief state of the speaker (Kratzer 1981), giving rise to the infelicity in (66a), although it is well-known that a purely solipsistic interpretation will make wrong predictions in many cases (see von Stechow and Gillies 2007 for discussion). Epistemic modals are sometimes claimed to take widest scope with respect to clause-mate operators (Drubig 2001, von Stechow

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<sup>42</sup> While it does not presuppose it, this view is perfectly compatible with hierarchical implications between different degrees of subjectivity.

and Iatridou 2003) or to at least strongly prefer to do so, and they can be hard to interpret in embedded positions such as conditional antecedents (as in (66b) from Papafragou 2006, her (8a, b)). We consider these patterns ‘obstinacy’ enough to classify epistemic modals in English as displaying subjectivity.

- (66) a. *#It might be raining but I don’t think that it is raining.*  
 b. *?If Max must/may be lonely, his wife will be worried.*

Provided enough context, *might* can, however, express compatibility with a salient belief state or source of information different from that of the speaker. Consider (67) from Egan, Hawthorne and Weatherson (2005), where Bill can use *might* to explain Ann’s otherwise surprising behavior to his fellow on-looker Chris. Salience of another belief state or source of information can render otherwise infelicitous occurrences as in conditional antecedents fully acceptable, as shown in (68).

- (67) Context: Chris sees Ann hide behind the bushes as a bus arrives and asks Bill why she is behaving so weirdly, to which Bill replies:  
*I might be on that bus.*
- (68) *If there might have been a mistake, the editor will have to reread the manuscript.*

(von Fintel and Gillies 2007, their (11))

*Might* is perfectly felicitous in attitude ascriptions, where, in the absence of strong contextual clues, it receives a *harmonic interpretation*, that is, it is interpreted with respect to the belief state described in the matrix sentence, as in (69a). In interrogatives, as in (69b), epistemic modals like *might* seem to be anchored to the belief state of the addressee (*perspective shift*, Mitchell 1986, or *interrogative flip*, Tenny and Speas 2004):

- (69) a. *John thinks that it might be raining.*  
 b. *Might he be in Boston?*

For prioritizing modals, subjectivity effects are often linked to *performativity* (following Austin’s distinction between performative and constative utterances). Speakers can, for instance, use deontic modals to change what is permissible rather than merely describe such a state of affairs. There are, however, two aspects to this use: (i) an actual change in what is permissible, and (ii) use of a modal flavor that has its source with the speaker (for instance, the speaker’s rules) or is endorsed by the speaker as a guidance in decision-making (for instance, when giving advice). For imperatives, in particular, Kaufmann (2016) argues that what is crucial is the second

aspect, as imperatives do not just express commands or orders (inducing changes in the content of the relevant rules), but also advice or wishes. Building on observations by Frank (1996), Kaufmann uses constructions as in (70a) to show that speakers are committed to endorsing the modality expressed by imperatives and certain modals. In this regard, Ninan (2005) argues that performative uses of necessity modals cannot be conjoined felicitously with the claim that preajacent will not come true, and he observes that *must* is inherently performative – in contrast to *have to*, for instance, which can be used descriptively, too, as in (70b).

- (70) a. *Go to Paris, #but I don't want you to.*  
 b. *Sam {has to/#must} go to confession, but he won't.*

Japanese imperatives trigger effects similar to (70a). The CEC markers of prioritizing necessity, in contrast, seem to behave like English *have to* in lacking subjectivity effects along these lines: *nakereba naranai* allows the speaker to continue with an assertion that the preajacent will not be met (as in (71)), or according to him/her does not actually have to be met (as in (72), note that, in this context, nominalization with ... *n desu* is preferred if not required). *-te mo ii* can be used to describe a set of rules independent of the speaker and comment on them (for instance, when studying a set of guidelines). In such cases, the rules exist independently of the speaker and are not changed by him/her.

- (71) *Ziroo wa asita ronbun o das-ana-kereba*  
 Jiroo TOP tomorrow paper ACC hand.in-NEG-COND  
*nar-ana-i. Demo, kitto das-ana-i.*  
 become-NEG-NPST. but most.likely hand.in-NEG-NPST  
 'Jiroo has to hand in his paper tomorrow. But most likely he won't.'
- (72) *Kimi wa asita ronbun o das-ana-ke-reba*  
 you TOP tomorrow paper ACC hand.in-NEG-COND  
*nara-na-i n da kedo maa, monku o*  
 become-NEG-NPST NMLZ COP.NPST but FL complaint ACC  
*iw-are-ru made wa daizyoobu daroo ne.*  
 say-PASS-NPST until TOP all.right TENT SFP  
 'You have to hand in your paper tomorrow. But, frankly, as long as they don't complain it'll probably be fine.' [speaker implies: 'I wouldn't worry about complying with this.']

- (73) MIT de wa nakaniwa ni tyuusya-si-te mo  
 MIT LOC TOP courtyard LOC park-do-GER even/also  
 i-i des-u. Bakageta kimari des-u ne.  
 be.good-NPST COP.POL-NPST stupid rule COP.POL-NPST SFP  
 ‘At MIT, one can park in the courtyard. That’s a stupid rule, isn’t it.’

CECs are particularly interesting in that they can also be related to subjectivity effects as observed with *taste predicates* (e. g. *fun, tasty, good,...*), which – like modal verbs – appear on the list of expressions that according to Speas and Tenny (2003) depend on a *source of evaluation*. Like epistemic modals, in the unembedded case, taste predicates typically depend on the speaker (as in (74a)), but undergo interrogative flip when appearing in matrix interrogatives (as in (74b)):

- (74) a. *Natto is tasty.*  
 b. *Is natto tasty?*

The same effect is observed for CECs, which, in the absence of a highly salient other set of rules (as in (73)), are anchored to the speaker in declaratives, and to the hearer in interrogatives, giving rise to the flip between permissions and requests for permissions (see Section 4.2). A similar shift is also observed with the morphological bouletic marker *-tai*, which (in the absence of evidential marking) depends on the speaker in main clause declaratives but shifts to the addressee in interrogatives:

- (75) a. *Biiru ga nom-ita-i des-u.*  
 beer NOM drink-DESI-NPST COP.POL-NPST  
 ‘I want to have a beer.’  
 b. *Biiru ga nom-ita-i des-u ka?*  
 beer NOM drink-DESI-NPST COP.POL-NPST Q  
 ‘Do you want to drink beer?’

Stephenson (2007a) points out that taste predicates and modals differ in the ease with which they can be anchored to sources other than the actual speaker: in this respect, Japanese CECs behave more like taste predicates, for which this is relatively easy.

### 6.3 Brief overview of types of formal semantic approaches

*Indexicals* like the English first person pronoun *I* and its Japanese equivalents *watasi, boku, ore,...* (differing in formality and gender identification) normally refer to the utterance speaker, independently of the depth of their syntactic embedding (Kaplan 1978). They are thus considered a prime case of subjectivity on many understandings



of the term (Benveniste 1971, S. Iwasaki 1993, Lyons 1995). Following Kaplan (1978), it is standardly assumed that natural language expressions have two dimensions of meaning, where the first (the *character*, a function applied to the utterance context) results in the usual *content* (e.g., the proposition expressed by a declarative sentence) as soon as the values of all indexicals have been filled in with the corresponding parameters of the utterance context. Subjectivity effects as described for modals above are sometimes captured as a form of indexicality (*contextualist account*): like *I*, certain modals relate to the speaker and possibly further parameters of the utterance context (e.g., Kratzer 1981, Papafragou 2006 for epistemic modality; Kaufmann 2012 for imperatives). In contrast to *I* or *watasi*, which will refer to the actual speaker even if embedded in a speech report, markers like *might* or *daroo* and similarly deontic modals or imperatives have been shown to prefer a *harmonic interpretation* in that they get anchored to the modality described by the embedding attitude predicate. At first glance, this may look like strong evidence against a treatment as indexicals. This problem vanishes, however, in view of relatively recent findings that many languages have indexical expressions that, while invariably anchored to a speaker, may also be anchored to the speaker of a context that is described in the matrix clause of a speech or attitude report (Schlenker 2011). Hara (2006) argues specifically that *daroo* is a shiftable indexical and can be anchored to the speaker of a non-actual context, but, unlike English *might* (e.g., in (67) above), cannot be shifted to the agent of a reasoning process. Shiftable indexicality is also attributed to imperatives in Slovenian by Stegovec and Kaufmann (2015) and in Korean (within a non-modal account of imperatives) by Pak, Portner, and Zanuttini (2008). McCready (2007) treats Japanese taste predicates as shiftable indexicals. Note that for any expression that can undergo interrogative flip (for instance, bouletic *-tai*) the relevant parameter of the utterance context cannot be the speaker, a parameter that is unaffected by interrogative formation. Instead, it could be a different parameter reflecting who counts as source of evaluation or source of knowledge in the given context (Speas and Tenny 2003), and which, by default, is identical to the speaker.

Lasersohn (2005) argues that a contextualist account fails to predict disagreement patterns with taste predicates: *No, it isn't* is perfectly fine in reply to (74a), but seems infelicitous as a response to (76), which, according to Lasersohn, is predicted to be a paraphrase of (74a) on a contextualist account.

(76) *Natto is tasty for me.*

He proposes a *relativist account*, on which the content of a sentence (i.e., once all contextual parameters are filled in) is evaluated for truth not only at a world and a time, but at a world, a time, and a *judge*. Two speakers uttering (75a) thus express the exact same content (the basis for disagreement), but their utterance is evaluated at different points of evaluation (so, the sentence can indeed be true for the one and false for the other, *flawless disagreement*). Stephenson (2007b) extends this account to epis-

temic modals. A different kind of relativist account for epistemic modals is offered by Yalcin (2007). He assumes that epistemic modals are evaluated with respect to a world, a time, and the belief state relevant to the on-going conversation. To capture interrogative flip and harmonic interpretations in attitude reports, relativist theories can analyze the relevant grammatical constructions as shifting the additional third parameter of evaluation (the judge or the belief state).

The third main type of approach assumes that the relation between perspective and illocutionary force of a sentence is *syntactically encoded*. An early account along these lines is Ross's *Performative Hypothesis* (Ross 1970), which assumes that any sentence is headed by a covert projection representing the speech act that is to be carried out (*I claim that, I order you to, I promise you that,...*). However, Speas and Tenny (2003) point out that grammatical structures cannot be specified for particular speech acts. Instead, sentences should be taken to constrain what speech acts they can be used for by delimiting general roles of speaker and addressee, similar to theta roles as assigned to the arguments of lexical predicates. They assume that sentences contain a speech act projection and a sentience projection, which determine how speaker and hearer relate to *point of view and source of knowledge*. While their rich representations have been criticized on a number of syntactic and semantic points (e.g., Gärtner and Steinbach 2006), the recent literature emphasizes a series of findings that speak in favor of a syntactic treatment. Differences in clause type correlate not only with differences in perspective or source of evaluation, but co-vary also with what appear to be syntactic phenomena such as verbal agreement (*conjunct-disjunct marking*, Hale 1980, Zu 2016), *obviation effects* (Schlenker 2005, Zu 2016), and obligatory self-ascription in control-constructions (*de se*-reports, Chierchia 1987). Pearson (2012, 2013), for instance, treats sentential meanings as properties and adopts speech act operators ASSERT and QUESTION that encode self-ascription to the speaker or the hearer, respectively. Stegovec (2019) extends Pearson's account to capture restrictions on the person parameter in embedded imperatives and directive subjunctives in Slovenian.

To conclude, while formal semantic and morphosyntactic approaches do not typically present themselves as trying to address the overarching question of subjectivity, from the brief sketch above, it should be obvious that there are a large number of recent theories for various types of phenomena relating to this concept. We hope that the discussion lets emerge a clear enough picture of how subjectivity can be approached in such frameworks, and what insights can be gained from the predictions made by different types of accounts. Linguistic markers have been shown to differ in what linguistic or non-linguistic factors can induce perspective shift and in the ease with which it occurs (e.g., Hara 2006, Stephenson 2007a); moreover, different markers in one and the same sentence can depend on different perspectives. This suggests that the various accounts are not in strict competition. Rather, a combination of accounts may be needed to achieve fully accurate predictions.

## 7 Conclusions

In this chapter, we have offered a brief overview of forms and constructions in Japanese that express displacement from the actual here and now and that are typically considered part of the grammatical system of the language, and we have aimed to relate our discussion of them to the state of the art in formal semantic and pragmatic theories.

We began with a short overview of the relevant items used to express modality in Japanese in Section 2, and provided in this chapter a more detailed discussion of specifics of the Japanese system, specifically the distinction between epistemic and evidential markers (Section 4.1), the use of conditional evaluative constructions (CECs) for prioritizing modality (Section 4.2), the absence of polyfunctionality across modal flavors (Section 4.3), and expressions that encode different types of necessity (Section 4.4). We have complemented the more descriptive parts with a brief introduction to the formal semantic literature on modality in general (Section 3), and we have tried to apply, or at least show options for applying, this framework throughout. This has informed in particular our discussion of conditional evaluative constructions (CECs) in Section 4.3 and the brief Section 4.4 on weak vs. strong modality, as well as our discussion of clause types (Section 5) and of various manifestations of subjectivity (Section 6).

Given limited space, we have only been able to provide a glimpse of what there is to be discovered on modality, and we have by no means been able to do full justice to the existing literature, especially outside of the formal semantic tradition. We hope, however, to have offered a fresh take, highlighting fascinating observations and investigations that address the Japanese system in particular, as well as illustrating what we take to be the strong points of formal semantics (and formal pragmatics). We hope that our investigation can help to inspire further work on Japanese modality across frameworks and traditions.

## Acknowledgments

Part of this work was supported by the Japanese Society for the Promotion of Science (JSPS) (research fellowship to the first author, August 2015 – December 2015), complemented by institutional support through Kyoto University, and by the ILCAA joint research project “Semantics of Discourse Particles in East and Southeast Asian Languages.” Previous versions of the more technical parts of this chapter have been presented by the first author at Ritsumeikan University, at the *Göttingen Spirit* Summer School as part of a course on conditional clauses (co-taught with Stefan Kaufmann), at the UConn Logic Group, at the Linguistics of Desire seminar at MIT, and as invited talks at the *Japanese Korean Linguistics Conference 24* and at the *Rutgers Workshop on*

*Semantics and Pragmatics 2017*, and we would like to thank the respective audiences on those occasions for their comments. Moreover, this work would have been impossible without comments and encouragement from many individuals, of whom we would in particular like to thank Akihiko Arano, Setsuko Arita, Woojin Chung, Seiko Fujii, Yoshiki Fujiwara, Yurie Hara, Ryosuke Hattori, Miwako Hisagi, Stefan Kaufmann, Takeo Kurafujii, Hiromune Oda, Miyu Oda, Yutaka Ohno, Lukas Rieser, Hiroaki Saito, Mamoru Saito, Yuta Sakamoto, Osamu Sawada, Peter Sells, Koji Shimamura, Una Stojnić, Joseph Tabolt, Chris Tancredi, Miwako Wakizaka, Masahiro Yamada, an anonymous reviewer for this volume, our editors Wesley Jacobsen and especially Yukinori Takubo, who provided us with detailed comments on the overall project and various versions of the manuscript. All remaining errors and shortcomings are ours.

## Additional abbreviations

FL – filler, GOAL – goal, NPST – nonpast, POT – potential, TENT – tentative

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**V The semantics of information:  
Speaker-oriented modality**



Yurie Hara

## 12 Evidentials: Marking the source of information

### 1 Introduction

The Maxim of Quality, one of the conversational maxims proposed by Grice (1975), says, “Do not say that for which you lack adequate evidence.” In apparent strict observance of this, one cannot in Japanese express in bare predicate form the experience of others, since one does not have direct access to evidence regarding the experience of others, as illustrated in the unacceptability of \**Taroo ga samui* ‘Taro feels cold’ (Kuno 1973). In everyday conversation, however, it is often necessary to make reference to information for which the evidence is uncertain. In such cases, it is still possible to express the information in question without wildly flouting the Maxim of Quality, thanks to the availability of tools in most natural languages to mark the source or degree of information, called evidentials. This chapter aims to provide an overview of lexical and other devices in Japanese that function to mark evidentiality, namely, sentence-final auxiliaries, causal connectives, and prosody.

This chapter is structured as follows: Section 2 discusses prototypical evidential morphemes in Japanese. Japanese has a rich paradigm of sentence-final auxiliaries that encode source of information (Aoki 1986) and make it possible for the person constraint on predicates of direct experience to be lifted (Kuroda 1973; Kuno 1973; Aoki 1986), e. g., *Taroo ga samui yoo-da*. ‘(I infer from my own experience that) Taroo feels cold.’ There has been a wide range of literature on the usage of Japanese evidential morphemes, such as *yoo-da/mitai-da/rasii* ‘it seems/appears,’ *Proposition+soo-da* ‘I hear,’ and *Verb infinitive (V<sub>inf</sub>)+soo-da* ‘looks like,’ in the traditional *Nihongogaku* [Study of Japanese grammar] literature (Kindaichi 1953, Teramura 1984, Nitta 1989; see also Takubo 2009 for an overview of these works). The current chapter focuses on the treatment of such items in the framework of formal semantics. The literature on the formal semantics of evidentiality centers around two questions: (1) What counts as evidence? and (2) What level of meaning does the evidential sentence contribute to: at-issue commitment, presupposition, conversational implicature, or expressive (conventional implicature)?<sup>1</sup> We will review four analyses of the Japanese evidential *yoo-da*, McCready and Ogata (2007), Takubo (2009), Davis and Hara (2014), and Hara

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<sup>1</sup> The term ‘at-issue commitment’ refers to the prototypical truth-conditional/semantic content that is obtained by the regular semantic composition. The term is introduced by Potts (2005) to differentiate at-issue commitments from conventional implicatures (expressives), which are also truth-conditional/semantic meanings obtained by composition. See Kinuhata (this volume) and Tomioka (this volume) for the definitions of and discussion on presuppositions and implicatures, respectively.

and Davis (2013), which address these two questions. Section 3 looks into Tenny's (2006) proposal to treat the Japanese causal connectives *kara/node* as evidential markers (see also Hara 2008), one argument for which is that these causal connectives allow the person constraint on predicates of direct experience to be lifted. Section 4 presents evidence that in Japanese the deaccenting of adjectives in rising declarative questions gives rise to an evidential interpretation (Hara et al. 2014). While the first topic, i. e., evidential auxiliaries, falls without question within the scope of the study of evidentiality, the latter two topics, i. e., causal connectives and prosody, are not traditionally considered to constitute evidential phenomena. Nonetheless, analyses of these linguistic phenomena in the recent literature provide convincing evidence that these give rise to evidential meaning, and they are therefore included in this chapter for their possible contributions to a revised understanding of the concept of evidentiality. Section 5 concludes the chapter.

## 2 Sentence-final auxiliaries

Japanese grammar is sensitive to how the information expressed in the propositional content of an utterance is acquired. To see this, let us start with the following contrast in predicates expressing personal experience or psychological states. Unlike English, Japanese treats information regarding personal experience and psychological states as available only to the direct experiencer of the states. Thus, such predicates allow only a first person subject interpretation, as in (1).

- (1) a. *Boku wa kanasi-i/uresi-i/samu-i.*  
           I       TOP be.sad-NPST/be.glad-NPST/be.cold-NPST  
           'I am sad/glad/cold.' (adapted from Shibatani 1990: 384)
- (1) b. \**Taroo-wa kanasi-i /uresi-i /samu-i.*  
           Taro-TOP be.sad-NPST/be.glad-NPST /be.cold-NPST  
           'Taro is sad/glad/cold.'

How is it possible then for Japanese speakers to express the internal experiences of others, such as those in (1b)? One way is to use sentence-final auxiliaries that indicate that the information is indirectly obtained, as in (2).

- (2) *Taroo wa kanasi-i yoo-da/rasii/soo-da/mitai-da.*  
       Taro TOP be.sad-NPST EVID  
       'Taro seems/looks sad.' (adapted from Shibatani 1990: 384)

In the recent literature, auxiliaries such as *yoo-da*, *rasii*, *soo-da*, and *mitai-da* are categorized as *evidentials*, linguistic expressions that indicate the source of evidence for a statement or proposition (Teramura 1984: 224–225; Aikhenvald 2004; Peterson et al. 2010). In traditional Japanese grammar (*Nihongogaku*), evidentiality is regarded as a subtype of propositional modality. More specifically, *yoo-da*-type auxiliaries such as *yoo-da/mitai-da/rasii* ‘it seems/appears that,’ *Proposition+soo-da* ‘I hear that,’ and *Infinitive+soo-da* ‘it looks like’ constitute evidential modality, while *daroo*-type auxiliaries such as *daroo* ‘it is probably the case that,’ *hazu-da* ‘it should be the case that,’ *nitigainai* ‘it must be the case that,’ and *kamosirenai* ‘it is possible/may be that’ constitute epistemic modality.<sup>2</sup> The difference between the two types lies in the presence or absence of evidence that supports the truth of the prejacent proposition (Teramura 1984, Aoki 1986, Morimoto 1994, Miyake 1995, Oosika 1995, Takubo 2009).<sup>3</sup>

This section first reviews in Section 2.1 some observations that have been made in the past literature regarding lexical restrictions on *yoo-da*-type evidential auxiliaries. Section 2.2 then gives an overview of four formal semantic analyses that have been proposed for the prototypical indirect Japanese evidential *yoo-da*.

## 2.1 Lexical restrictions: Types of evidence

This section provides an overview of lexical restrictions that have been observed for Japanese evidential morphemes, in particular, what kinds of source of evidence are compatible with the use of such morphemes. All of the data and judgements in this section are based on Aoki (1986) and McCready and Ogata (2007) unless otherwise noted.

### 2.1.1 Indirect/inferential evidence: *yoo-da/mitai/rasii/V<sub>inf</sub>+soo-da*

We begin with the indirect/inferential evidentials *yoo-da/mitai/rasii/V<sub>inf</sub>+soo-da*. Aoki (1986) states that ‘*yoo-da* is used when the speaker has visible, tangible or audible evidence gathered through his own senses’ (Aoki 1986: 231):

- (3) a. *Kono kusuri wa yoku kik-u yoo-da/mitai/rasii.*  
           this medicine TOP well work-NPST EVID  
           ‘It seems/appears that this medicine works well.’

<sup>2</sup> See M. Kaufmann & Tamura (this volume) for a discussion of modality in Japanese.

<sup>3</sup> See Takubo (2009: Section 2) for a discussion of the empirical data relating to the difference between the two types. Takubo (2009) further argues that the difference can be characterized in terms of the directionality of inference, the *yoo-da*-type involving abductive inference while the *daroo*-type involves deductive inference. See also Section 2.2.2 below.



- b. *Kono kusuri wa yoku kik-i soo-da.*  
 this medicine TOP well work-INF EVID  
 ‘I have a feeling that this medicine works well.’

(adapted from Aoki 1986: 232)

As can be seen in (3), *mitai(-da)/rasii/V<sub>inf</sub>+soo-da* can be used with the same evidence source.

McCready and Ogata (2007) observe that besides Aoki’s “visible, tangible or audible evidence,” *unknown evidence* can license the use of indirect/inferential evidentials as long as it is strong enough for the speaker to make an inference:

- (4) a. *Nazeka yoku wakar-ana-i kedo kore wa yoku*  
 somehow well understand-NEG-NPST but this TOP well  
*ure-ru yoo-da/mitai/rasii*  
 sell-NPST EVID  
 ‘I don’t really understand why but this thing apparently sells well.’
- b. *Nazeka yoku wakar-ana-i kedo kore wa yoku ure*  
 somehow well understand-NEG-NPS but this TOP well sell-INF  
*soo-da.*  
 EVID  
 ‘I don’t really understand why but I have a feeling that this thing sells well.’

Aoki (1986) does not discuss *mitai*, but according to McCready and Ogata (2007), *yoo-da* and *mitai* have almost the same distribution.<sup>4</sup> *Rasii* is different from *yoo-da/mitai* in that the former cannot, and the latter can, be used in cases where the inference is obtained from tactile or visual evidence:

- (5) a. Tactile (spoken by a patient):  
*Koko ga musiba ni nat-tei-ru yoo-da/mitai/#rasii.*  
 here NOM cavity-DAT become-RES-NPST EVID  
 ‘I seem to have a cavity here (touching tooth).’

<sup>4</sup> McCready and Ogata (2007: 159) do claim that *yoo-da* is different from *mitai* “with respect to strictly inferential evidence; [the] use of *yoo* is slightly worse than [the] use of *mitai*” in (i). The present author, however, feels no such contrast, judging the two as equally infelicitous in this example.

- (i) #*Kinoo mo daremo ko-na-katta node kyoo mo daremo ko-na-i*  
 yesterday also anyone come-NEG-PST so today also anyone come-NEG-NPST  
*{yoo/mitai}-da.*  
 EVID  
 ‘No one came yesterday, so it seems that no one will come today either.’

(McCready and Ogata 2007: 160)

- b. Visual evidence (spoken by a dentist):

*Soko ga musiba ni nat-tei-ru yoo-da/mitai/#rasii.*  
 there NOM cavity DAT become-RES-NPST EVID

‘You seem to have a cavity there (observing a blackened tooth).’

(adapted from Ogata 2005, cited in McCready and Ogata 2007: 156)

Finally,  $V_{inf}+soo-da$  is compatible with all types of evidence except for hearsay evidence. Only  $V_{inf}+soo-da$  can be used with what McCready and Ogata (2007) call *judgmental evidence*, in which “the judgment of the speaker is crucial; for other speakers, it might be that the evidence is not evidence at all” (McCready and Ogata 2007: 158):

- (6) *Mirukarani kono ringo wa oisi-soo-da/*  
 from.its.looks this apple TOP be.delicious.INF-EVID/  
*#oisi-i-yoo-da/ #oisi-i mitai/ #oisi-i #rasii.*  
 be.delicious-NPST-EVID/ be.delicious-NPST-EVID/ be.delicious-NPST-EVID  
 ‘Based on its appearance this apple seems delicious.’

(adapted from McCready and Ogata 2007: 156)

### 2.1.2 Hearsay evidence: Proposition+*soo-da/rasii*

Hearsay evidence is most typically expressed by the form *Proposition+soo-da*, as follows:

- (7) *Rinzin no hanasi ni yoru-to koko wa dare-mo*  
 neighbor GEN speech DAT be.based.on-COND here -TOP no.one  
*i-na-i soo-da/rasii.*  
 exist-NEG-NPST EVID

‘According to the neighbor, no one lives here.’

(adapted from McCready and Ogata 2007: 155)

The inferential evidential *rasii* discussed above can be used as hearsay evidence, as can be seen in (7). While *Prop.+soo-da* is “a pure hearsay evidential” (McCready and Ogata 2007: 160) in that it becomes infelicitous if the speaker obtains the information solely via inference from his or her own experience and not from another person, *rasii* is compatible with both inferential and hearsay evidence.

### 2.1.3 Summary

Table 1 summarizes the available sources of evidence for the evidential morphemes discussed in this section.

**Table 1:** Types of evidence (adapted from McCready and Ogata 2007: 163)

|                     | tactile | visual | auditory | internal<br>sensory | unknown | judgmental     | hearsay |
|---------------------|---------|--------|----------|---------------------|---------|----------------|---------|
| <i>yoo-da</i>       | ✓       | ✓      | ✓        | ✓                   | ✓       | ×              | ?       |
| <i>mitai</i>        | ✓       | ✓      | ✓        | ✓                   | ✓       | × <sup>5</sup> | ?       |
| <i>rasii</i>        | ×       | ×      | ✓        | ✓                   | ✓       | ×              | ✓       |
| <i>Inf.+soo-da</i>  | ✓       | ✓      | ✓        | ✓                   | ✓       | ✓              | ×       |
| <i>Prop.+soo-da</i> | ×       | ×      | ×        | ×                   | ×       | ×              | ✓       |

## 2.2 Formal analysis of indirect evidentiality

In this section we will consider the formal semantic treatment of *yoo-da*, which falls under the category of *indirect/inferential evidential* as it indicates that the speaker did not directly experience the situation described. In a parallel example from another language, Izvorski (1997) analyzes the Bulgarian present perfect as an indirect evidential.

- (8) *Toj izpil vsiškoto vino včera.*  
 he drink-PE<sup>6</sup> all.the wine yesterday  
 ‘He apparently drank all the wine yesterday.’ (Bulgarian; Izvorski 1997)

According to Izvorski (1997), indirect evidentiality is expressed as a presupposition of the utterance, as represented in (9), where  $\Box$  is a Kratzerian universal epistemic modal (Kratzer 1991).<sup>7</sup>

<sup>5</sup> McCready and Ogata’s (2007) original table on page 163 puts “?” in this cell. See footnote 4.

<sup>6</sup> PE stands for the *perfect of evidentiality* following Izvorski (1997).

<sup>7</sup> In Kratzer (1991), English modal auxiliaries are treated as existential or universal quantification over possible worlds. The interpretation of modality is also subject to the modal flavor as determined by the conversational background, a modal base, and an ordering source. In a nutshell, the modal flavor is epistemic when the modal base encapsulates what is known. See M. Kaufmann & Tamura (this volume).

- (9) Interpretation of EVID(*p*):
- a. Assertion:  $\Box p$  in view of the speaker's knowledge state
  - b. Presupposition: Speaker has indirect evidence for *p* (Izvorski 1997)

A parallel analysis can be given to Japanese indirect evidentials. That is, (2) can be understood as follows:

- (10) Interpretation of (2):
- a. Assertion:  $\Box$ ('Taro is sad') in view of the speaker's knowledge state
  - b. Presupposition: Speaker has indirect evidence for 'Taro is sad.'

As can be seen in (10a), this line of analysis subsumes evidentiality under the general category of epistemic modality (see also Matthewson et al. 2006).<sup>8</sup> Indeed, in the recent literature on epistemic modality, canonical modals like English *must* are argued to be evidentials (von Fintel and Gillies 2010).<sup>9</sup> Similarly, Northrup (2014) proposes a notion of evidential base that "is directly analogous to the modal base of Kratzer (1981, 1991)" (Northrup 2014: 39) to analyze the Japanese sentence-final particles *yo* and *ne*.<sup>10</sup> This evidential base is "the set of propositions that, when taken together, serve to underwrite a commitment" (Northrup 2014: 39). As will be argued below, however, treating Japanese indirect evidentials as epistemic modals is not without problem.

Another problem with an analysis like (10), as pointed out by McCready (2010), is that it leaves the notion of indirect evidentiality unanalyzed. With a partial view to addressing this issue, I will in the following sections review four theories that scrutinize the semantics of indirect evidentials, focusing on formal analyses that address the following two questions:

- (11) a. What counts as indirect evidence?
- b. What level of meaning (e. g., at-issue commitment (Potts 2005),<sup>11</sup> presupposition, conversational implicature, conventional implicature (expressive) à la Potts (2005), etc.) does the evidential component contribute to?

<sup>8</sup> See Chapter 13 of Matthewson et al. (2006) for a discussion of Japanese epistemic modals.

<sup>9</sup> See Lassiter (2014) for an argument against von Fintel and Gillies' analysis of *must*.

<sup>10</sup> See McCready & Davis (this volume) for a discussion of the semantics and pragmatics of Japanese sentence-final particles.

<sup>11</sup> See footnote 2.

### 2.2.1 A probabilistic model (McCready and Ogata 2007)

McCready and Ogata (2007) are the first to provide a concrete formal analysis of Japanese indirect evidentiality. In a nutshell, they propose that a piece of information  $e$  is regarded as evidence for a prejacent proposition  $p$  just in case it raises the subjective probability of  $p$  for an agent  $a$ :<sup>12</sup>

- (12)  $p$ -*yoo-da*, relativized to agent  $a$ , indicates that:
- a. some information  $e$  has led  $a$  to raise the subjective probability of  $p$  ( $P_a(p)$ )
  - b.  $a$  takes  $p$  to be probably but not certainly true ( $.5 < P_a(p) < 1$ ) after learning  $e$ .

As an example, consider the following:

- (13) Context: looking at a wet street  
*Ame ga hut-te-i-ru yoo-da.*  
 rain NOM fall-PROG-NPST EVID  
 ‘It seems to be raining.’

Here, the prejacent proposition  $p$  is ‘it is raining,’ and  $e$  is the background information ‘the street is wet.’ McCready and Ogata (2007) predict that this sentence should mean something like the following (see Section 2.1 for the lexical restrictions associated with each evidential morpheme.):

- (14) a. The information ‘the street is wet’ has led the speaker to raise her subjective probability for the proposition ‘it is raining.’
- b. The resulting subjective probability for ‘it is raining’ is greater than .5 but less than 1.
  - c. The speaker has accessed the information ‘the street is wet’ in a manner compatible with the lexical restrictions peculiar to the particular evidential form in question.

Although McCready and Ogata (2007) explicitly define evidence and provide an intuitively satisfying interpretation of (13), their analysis makes wrong predictions if we interchange the content of the prejacent proposition  $p$  and the evidence information  $e$ , as in (15).

<sup>12</sup> In addition, there are lexically specified restrictions on the means by which  $a$  has accessed the information  $e$ . See McCready and Ogata (2007) for details.

- (15) Context: watching the rain falling  
 #Miti ga nure-tei-ru yoo-da.  
 street NOM become.wet-RES-NPST EVID  
 ‘The streets seem to be wet.’  
 (cf. *Miti ga nurete-iru ni-tigai-nai*. ‘The streets must be wet.’)

In (15), the agent’s evidence information  $e$  is now the proposition ‘it is raining,’ while the content of the prejacent proposition  $p$  is ‘the streets are wet.’ Following McCready and Ogata’s analysis, this utterance should be interpretable as follows:

- (16) a. The information ‘it is raining’ has led the speaker to raise her subjective probability for the proposition ‘the streets are wet.’  
 b. The resulting subjective probability for ‘the streets are wet’ is greater than .5 but less than 1.  
 c. The speaker has accessed the information ‘it is raining’ in a manner compatible with the lexical restrictions peculiar to *yoo-da*.

(15) satisfies all of these requirements. Learning that it is raining should reasonably raise the probability of the proposition ‘the streets are wet,’ though not necessarily to the high end of the probability scale. The speaker has access to the contextual information ‘it is raining’ in (15) in the same manner (i. e., visual) as in (13). Therefore, (15) is predicted to be as felicitous as (13). However, (15) is infelicitous, unlike (13).

In short, in McCready and Ogata’s (2007) theory, the relationship between the prejacent proposition  $p$  and the evidence information  $e$  is symmetric. Learning either item of information can plausibly raise the probability of the other. Thus, the asymmetry observed in (10) and (8) is unaccounted for in their theory.

### 2.2.2 Conditional dependence (Takubo 2009)

Takubo (2009) provides an analysis of *yoo-da* that captures this asymmetric relationship between the information  $e$  and the prejacent proposition  $p$ . According to him, a *yoo-da* sentence involves an abductive inference based on a conditional statement  $p \rightarrow e$ . A minor premise  $e$  counts as evidence if the conclusion  $p$  is abductively inferred from the major premise  $p \rightarrow e$ :

- (17) Major premise  $p \rightarrow e$   
 Minor premise  $e$   
 —————  
 Conclusion  $p$

According to Takubo (2009), *yoo-da* can be attached to a sentence that denotes the conclusion  $p$  when there is a piece of information  $e$  from which  $p$  can be abductively inferred given the background knowledge that  $p \rightarrow e$ . For instance, in (18), there is a major premise ‘If it is raining, the streets are wet’ present as background knowledge. The new information ‘The streets are wet’ thus counts as evidence for the proposition of the *yoo-da*-utterance in (18) based on this abductive reasoning.

- (18) Major premise: If it is raining, the streets are wet.  
 Minor premise: The streets are wet.  


---

 Conclusion: It is raining.

Although Takubo’s insight on the directionality of the inference can account for the asymmetry observed earlier, using conditional dependencies as a basis for such an inference is not strong enough to predict the distribution of *yoo-da*-sentences. Consider the following bi-conditional, which may reasonably be considered to be part of our background knowledge.

- (19) You have a red-brown rash.  $\leftrightarrow$  You have measles.

Given the bidirectionality of (19), there are two conditional statements that we may assume are present in our background knowledge. One is that if you have measles, you have a red-brown rash on your skin. If the speaker  $a$  newly perceives that Taro has a red-brown rash on his skin,  $a$  can abductively derive the conclusion that Taro has measles from this background knowledge:

- (20) Major premise: If you have measles, you have a red-brown rash.  
 Minor premise: Taro has a red-brown rash.  


---

 Conclusion: Taro has measles.

Thus, Takubo’s analysis correctly predicts that *yoo-da* can be attached to the conclusion as in (21).

- (21) Context: looking at Taro’s skin  
*Taroo wa hasika no yoo-da.*  
 Taro TOP measles COP EVID  
 ‘Taro appears to have the measles.’

By contrast, the other direction of the bi-conditional is problematic for Takubo’s analysis. It is reasonable to assume as background information that ‘if you have a red-brown rash on your skin, you have measles,’ thereby setting up the following abductive inference.

- (22) Major premise: If you have a red-brown rash, you have measles.  
 Minor premise: Taro has measles.
- 
- Conclusion: Taro has a red-brown rash.

Thus, according to Takubo's analysis, if the speaker has information that Taro has measles, she could abductively conclude that Taro has a red-brown rash and it should be possible for *yoo-da*, in turn, to attach to this conclusion. However, this is the wrong prediction:

- (23) Context: reading a medical report showing that Taro has been diagnosed with measles
- |        |     |           |     |        |     |            |         |
|--------|-----|-----------|-----|--------|-----|------------|---------|
| #Taroo | wa  | akatyairo | no  | sissin | ga  | ar-u       | yoo-da. |
| Taro   | TOP | red.brown | GEN | rash   | NOM | exist-NPST | EVID    |
- 'Taro seems to have a red-brown rash.'

The crucial difference between (21) and (23) is that the conditional relationship  $p \rightarrow e$  employed for the inference in (21) is a causal relationship. Although the notions of causality and causal chain are mentioned in Takubo (2009: 173), they are not formally encoded in the lexical restrictions proposed for *yoo-da* in his account.

### 2.2.3 Evidentiality and causality (Davis and Hara 2014)

Davis and Hara (2014) explicitly argue against evidentiality-as-modality theories, defining "indirect evidence" with *yoo-da* in terms of an observation of the resulting effect of the cause-effect dependency.

As noted above, previous studies on evidentials (Izvorski 1997; Matthewson et al. 2006; McCready and Ogata 2007; von Fintel and Gillies 2010) predominantly argue that evidentiality is a kind of epistemic modality. That is, *Evid(p)* entails *Modal(p)*. According to this line of analysis, since *Modal(p)* gives rise to an epistemic commitment to *p*, *Evid(p)* should also give rise to a commitment to *p*. In (24) and (25), to illustrate, both a bare assertion *p* and *Modal(p)* commit the speaker to *p*, thus *p* cannot be canceled:

- (24) #Ame ga hut-ta kedo zitu wa hut-tei-na-i.  
 rain NOM fall-PST but fact TOP fall-RES-NEG-NPST  
 'It rained but in fact it didn't.'

- (25) #Ame ga hut-ta daroo kedo zitu wa hut-tei-na-i.  
 rain NOM fall-PST TENT but fact TOP fall-RES-NEG-NPST  
 'Probably, it rained but in fact it didn't.'



Thus, if an indirect evidential like *yoo-da* were a type of epistemic modality, uttering *p-yoo-da* should give rise to a commitment to *p* as well. However, Davis and Hara (2014) show that this claim cannot be maintained since the prejacent *p* in *p-yoo-da* is cancellable, as in (26).<sup>13</sup>

- (26) *Ame ga hut-ta yoo-da kedo, zitu wa hut-tei-na-i.*  
 rain NOM fall-PST EVID but fact TOP fall-RES-NEG-NPST  
 ‘It seems that it rained, but in fact it didn’t.’

In short, Davis and Hara (2014) conclude that the prejacent proposition in *p-yoo-da* is not an at-issue commitment to the truth of *p*, but rather a cancellable implicature.

Now, as we have seen in Section 2.2, causality seems to be indispensable in defining the indirect evidentiality of *yoo-da*. On the basis of this observation, Davis and Hara (2014) propose that for the purpose of using *yoo-da*, a piece of information *q* can be regarded as indirect evidence for *p* just in case *q* is a situation typically caused by *p*.<sup>14</sup> Specifically, Davis and Hara (2014) define the semantics of *yoo-da* as follows:<sup>15</sup>

- (27) Davis and Hara’s interpretation of evidentials  
 Evid(*p*) is true at *w* iff  $\exists q$  such that the speaker perceives a state *q* at *w* and *p* causes *q*.

To see how (27) derives the distribution and interpretation of *yoo-da* sentences, consider first (28), where the speaker is merely asserting in the first conjunct that she has observed some state, e. g., the streets being wet, which is usually caused by rain. This assertion does not contradict the assertion in the second conjunct, however, since the streets could be wet for other reasons, e. g., because someone sprayed the streets with water using a hose.<sup>16</sup>

- (28) *Ame ga hut-ta yoo-da kedo, zitu wa hut-tei-na-i.*  
 rain NOM fall-PST EVID but fact TOP fall-RES-NEG-NPST  
 ‘It seems that it has rained, but in fact it hasn’t.’

<sup>13</sup> A similar argument is made for reportative evidentials by Faller (2002); Murray (2010); AnderBois (2014).

<sup>14</sup> Sawada (2006) also argues that *yoo-da* is a form of modality that implies a cause.

<sup>15</sup> Hara (2017) formalizes the notion of causality using S. Kaufmann’s (2013) causal premise semantics. Hara et al. (2018) report a naturalness rating study and a corpus study that support the relevance of causality to the interpretation of evidentials.

<sup>16</sup> A reviewer commented that (28) might be a case of the use of *yoo-da* as a simile (*hikyoo*) in traditional Japanese grammar. I do not see any motivation to treat *yoo-da* as ambiguous between simile and non-simile uses as the formal analysis presented in Hara (2017) can derive all the interpretations of *yoo-da* including (28).

(27) is, furthermore, able to explain the asymmetry of evidentiality. The unacceptability of (29), for example, follows on this account from the fact that it can be paraphrased as “I observed rain falling, and rain is caused by wet streets,” which is false according to our knowledge of the world.

(29) Context: watching rain falling

#Miti ga nure-tei-ru yoo-da.  
 street NOM become.wet-RES-NPST EVID  
 ‘#It seems that the streets are wet.’

Finally, since (27) is defined not on the basis of conditional inference but on the basis of an asymmetric cause-effect dependency, it resolves the problem encountered by Takubo’s analysis noted in connection with (23), repeated here as (30). (27) correctly rules out (30) because (30) can be paraphrased as “I observed that Taro has measles, and a red-brown rash causes measles,” and it is false that a red-brown rash causes measles according to our knowledge of the world.

(30) (= (23)) Context: reading a medical report showing that Taro has been diagnosed with measles

#Taroo wa akatyaairo no sissin ga ar-u yoo-da.  
 Taro TOP red.brown GEN rash NOM exist-NPST EVID  
 ‘Taro seems to have a red-brown rash.’

To recapitulate, under Davis and Hara’s (2014) analysis, by asserting *p-yoo-da*, the speaker is asserting that she observes some effect which is caused by *p*.<sup>17</sup> Thus, the speaker is not epistemically committed to *p* itself.

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<sup>17</sup> A reviewer noted that the claim that causality is involved in the lexical characterization of *yoo-da* seems to be too strong as we can suppose a context in which A and B are always together and say the following:

- (i) A ga i-ru. Kooiu baai wa oo’oonisite B mo i-ru  
 A NOM exist-NPST this.kind situation TOP usually B also exist-NPST  
*yoo-da*.  
 EVID  
 ‘A is here. Usually in this kind of situation, B is also here.’

However, the background knowledge used in this inference ‘A and B are always together’ can be rewritten as a bi-directional causal statement ‘A’s presence causes B’s presence and vice versa.’ Since the notion of causality is necessary to account for a bi-conditional which is causal uni-directional like (30), causality needs to be involved in the lexical characterization of *yoo-da*.

### 2.2.4 OT pragmatics (Hara and Davis 2013)

In the previous sections, we have considered approaches that attempt to describe the distribution of evidential morphemes by identifying the nature of indirect evidentiality to answer one question in (11): What counts as indirect evidence? Hara and Davis (2013) take a slightly different approach to answer the other question in (11): What level of meaning does the evidential component contribute to? Hara and Davis (2013) propose that *evidential* auxiliaries have an expressive context-shifting semantics and use Optimality Theoretic constraints to analyze the distribution of evidentials in comparison with the other type of sentence-final auxiliaries, i.e., the *daroo*-type/epistemic modal auxiliaries mentioned above.

As discussed above, one plausible account of evidential morphemes is to treat them as presupposition triggers, as in (9), repeated here as (31).

- (31) Interpretation of EVID (p):
- a. Assertion:  $\Box p$  in view of the speaker's knowledge state
  - b. Presupposition: Speaker has indirect evidence for  $p$

Hara and Davis (2013) discuss both empirical and conceptual problems with the presuppositional account. For instance, Japanese evidential morphemes are obligatory in the contexts where they are appropriate. Presupposition triggers, however, can normally be omitted without causing infelicity. In English, the phrase *manage to VP* presupposes that it is difficult to VP. In (32), the context satisfies this presupposition. However, the context does not require the use of *manage to VP*, as shown by the felicity of the version in which it is omitted.

- (32) Context: it was very difficult to open the door.
- a. *But, John managed to open it.*
  - b. *But, John opened it.*

In contrast, the omission of *yoo-da* in the following causes the utterance to be infelicitous.

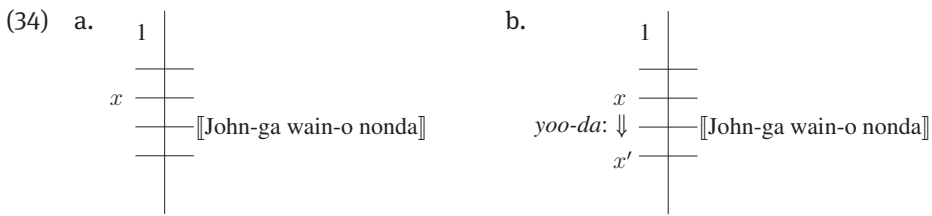
- (33) Context: the last name of the speaker's ex-girlfriend in the alumni directory has changed.
- Kanozyo wa moo kekkon-si-ta #(yoo-da).*  
 she TOP already get.married-do-PST EVID  
 '(It seems that) she has already gotten married.'

(adapted from Morimoto 1994)

The presuppositional account is also conceptually problematic. Hara and Davis (2013) discuss the problem of the “presupposition” of *yoo-da* in comparison with that of a modal particle *daroo*. As discussed in Hara (2006), *daroo* cannot appear when the speaker has direct/indirect evidence for the prejacent proposition. In other words, *daroo* presupposes a context in which *yoo-da* cannot be used. Thus, the presuppositional requirements of *daroo* and *yoo-da* make it impossible for each to appear in the context where the other must appear. This way of characterizing the distribution of sentence-final auxiliaries is redundant.

Given these problems with the presuppositional account, Hara and Davis (2013) propose that *evidential* auxiliaries have an expressive context-shifting semantics (Davis et al. 2007), and that the choice of auxiliary is determined through optimality theoretic competition (Zeevat 2004).

According to Davis et al. (2007), evidentials are used to *shift* the context for felicitous assertion. To illustrate, imagine that the speaker wishes to assert *John ga wain o nonda* ‘John drank wine,’ but that the speaker’s subjective probability for the proposition is lower than the value  $x$  required for the default context in which this can be asserted, as depicted in (34a).



(adapted from Hara and Davis 2013)

Uttering the sentence in this default context without any shifting would violate the Gricean Maxim of Quality:

- (35) Grice’s Maxim of Quality
- Do not say what you believe to be false.
  - Do not say that for which you lack adequate evidence.

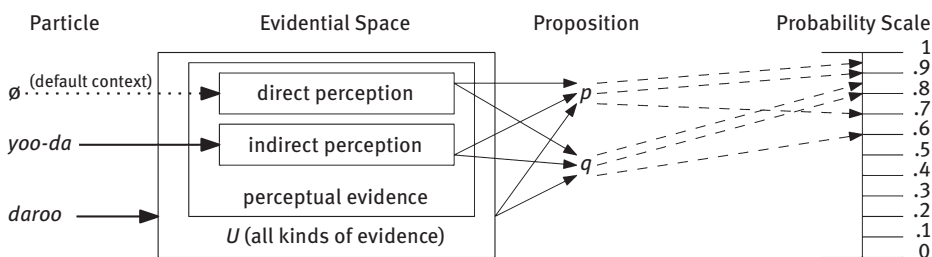
The default context, that is, requires that the speaker’s subjective probability for the proposition must be quite high. The evidential morpheme *yoo-da* serves to lower this contextually required value, making it possible for the speaker to utter the sentence without violating the Maxim of Quality, as schematized in (34b).

In Hara and Davis (2013), the contextual threshold is defined as a 2-tuple  $Cr = \langle ev, x \rangle$ , where  $ev$  is a set of *evidential values* and  $x$  is a number between 0 and 1 (i. e.,  $x \in [0, 1]$ ). The notion of evidentials as context-shifters is implemented in their definitions as in the following, where  $\approx$  is to be interpreted as ‘is equivalent to,’  $\mu_c$  is a function

that applies to evidence kind and returns a probability threshold (Davis et al. 2007), and  $U$  refers to the set of *all* evidence types.<sup>18,19</sup>

- (36) a. Uttering *p-yoo-da*  
 $\approx$  uttering *p* in a shifted context C where:  $C\tau = \langle \textit{indirect}, \mu_c(\textit{indirect}) \rangle$   
 b. Uttering *p-daroo*  
 $\approx$  uttering *p* in a shifted context C where:  $C\tau = \langle U, \mu_c(U) \rangle$   
 (Hara and Davis 2013)

The interpretation of the evidential morpheme in each of these cases is exemplified in Figure 1, where both  $p$  and  $q$  are arbitrary prejacent propositions with different contents. The first and the second arrows coming out of Evidential Space point to  $p$  and  $q$ , respectively. In a default context, without any auxiliary or particle,  $ev$  is specified as direct evidence, and the threshold value  $x$  for subjective probability is set very high assuming that the speaker is observing the Maxim of Quality. As a concrete illustration, when the speaker utters  $p-\emptyset$  ( $q-\emptyset$ ), her subjective probability for  $p$  ( $q$ ) is interpreted to be 0.95 (0.85). If *yoo-da* is used,  $ev$  is set to be indirect evidence and  $x$  is lowered to  $\mu_c(indirect)$ . The subjective probabilities for  $p$  and  $q$  are then lowered to 0.9 and 0.8, respectively. Finally, if *daroo* is used,  $ev$  is identified as the set of all evidence types,  $U$ ,  $x$  is identified as  $\mu_c(U)$ , and the subjective probability for  $p$  in  $p-daroo$  is interpreted as 0.7 and the one for  $q$  in  $q-daroo$  as 0.6.



**Figure 1:** Adapted from Hara and Davis (2013: 52)

Hara and Davis (2013) then account for the distributions of *daroo* and *yoo-da* within Optimality Theory (OT) Pragmatics (Blutner and Zeevat 2004). The Gricean Maxim of Quality is formulated as an OT constraint, *QUALITY*, as in (37).

**18** Note that unlike the three approaches presented earlier in this section, the current approach leaves the notion of indirect evidence as primitive.

**19** How the context-shifting functions of other evidentials discussed in Section 2.1 can be defined is left for future research.

(37) QUALITY:

If a speaker *S* asserts a proposition *p* in a context where  $C_t = \langle ev, x \rangle$ , the following must hold:

$P_s(p) \geq x$  and  $E_s(p) \in ev$ ,

where  $P_s(p)$  is the speaker's subjective probability for *p* and  $E_s(p)$  is the kind of evidence the speaker has for *p*. (Hara and Davis 2013)

QUALITY is ranked higher than another Gricean constraint QUANTITY (see also Blutner 2000).<sup>20</sup>

(38) QUANTITY: Make your contribution as informative as possible.

In the context of evidentiality, the informativity requirement of QUANTITY militates against relaxing the evidentiality requirement. The bare assertion *p* is more informative than *p-yoo-da*, not with respect to propositional content but with respect to evidentiality, since *yoo-da* relaxes the value of the probability threshold *x*, hence the use of *yoo-da* violates QUANTITY. Furthermore, the use of *daroo* not only loosens the probability threshold but also expands the permissible evidence kind *ev*, thus *p-daroo* causes an even more serious violation of QUANTITY.

Let us illustrate here how the OT competition works with three contexts. First, in (39), the speaker has *direct* evidence, thus QUALITY rules out *yoo-da*. The constraint QUANTITY prohibits the use of *daroo*, which makes the bare declarative the winner, as shown in the tableau in (40).<sup>21</sup>

(39) Context: the speaker has directly observed John drinking heavily.

*Kinoo John wa wain o takusan non-da*  
 yesterday John TOP wine ACC a.lot drink-PST  
 ✓∅/#daroo/#yoo-da.  
 ∅/TENT/EVID  
 'John drank a lot of wine yesterday.'

<sup>20</sup> Originally, Hara and Davis (2013) had another violable economy constraint \*PARTICLE, which punishes any use of particles (auxiliaries).

(i) \*PARTICLE:

Don't use particles. (Zeevat 2004)

However, the constraint QUANTITY, which is also a violable economy constraint, alone can rule out the unnecessary use of particles.

<sup>21</sup> In the OT tableau, a higher ranked constraint is placed on the left. In (40), Quality is ranked highest so it is placed on the leftmost end. The input (*p*, direct) is placed on the top-left corner and output candidates are placed in the same column. The symbol '\*' indicates that the candidate violates the constraint. '!' indicates that the violation next to it is a fatal one for the candidate. '⊞' points to the optimal candidate which does better with the higher ranked constraint than the other candidates.

(40)

| <i>p</i> , direct                            | QUALITY | QUANTITY |
|----------------------------------------------|---------|----------|
| a. $\text{E}_{\text{Q}}^{\text{Q}}$ <i>p</i> |         |          |
| b. <i>p</i> -daroo                           |         | *!*      |
| c. <i>p</i> -yoo-da                          | *!      | *        |

Second, in (41), the speaker has only indirect evidence for *p*. The bare declarative is ruled out by QUALITY. The use of *yoo-da* is more optimal than that of *daroo* since it causes lesser violations of QUANTITY, as shown in (42).

(41)

Context: John's room is strewn with empty wine bottles.

*Kinoo John wa wain o takusan non-da*

yesterday John TOP wine ACC a.lot drink-PST

# $\emptyset$ /#*daroo*/✓*yoo-da*. $\emptyset$ /TENT/EVID

'John drank a lot of wine yesterday.'

(42)

| <i>p</i> , indirect                                  | QUALITY | QUANTITY |
|------------------------------------------------------|---------|----------|
| a. <i>p</i>                                          | *!      |          |
| b. <i>p</i> -daroo                                   |         | **!      |
| c. $\text{E}_{\text{Q}}^{\text{Q}}$ <i>p</i> -yoo-da |         | *        |

Finally, in context (43), QUALITY blocks the bare declarative since the speaker does not have evidence for *p*. QUALITY also blocks *yoo-da* since *yoo-da* only shifts  $C_{\tau}$  to include indirect evidence. Since *daroo* can include all evidence sources, *daroo* is selected as the winner, as seen in the table in (44).

(43) a. Background knowledge: John likes wine very much.

b. *Kinoo John wa wain o takusan non-da*

yesterday John TOP wine ACC a.lot drink-PST

# $\emptyset$ /*daroo*/#*yoo-da*. $\emptyset$ /TENT/EVID

'John drank a lot of wine yesterday.'

(44)

| <i>p</i>                                            | QUALITY | QUANTITY |
|-----------------------------------------------------|---------|----------|
| a. <i>p</i>                                         | *!      |          |
| b. $\text{E}_{\text{Q}}^{\text{Q}}$ <i>p</i> -daroo |         | **       |
| c. <i>p</i> -yoo-da                                 | *!      | *        |

To summarize, Hara and Davis (2013) propose that evidential and modal auxiliaries are context shifters that loosen the contextual threshold  $C_{\tau}$  to avoid a violation of the Gricean Maxim of Quality. In combination with Optimality Theoretic constraints, the

proposal accounts for distributional patterns of evidential auxiliaries that cannot be captured by the presuppositional account.

## 2.3 Interim summary

Japanese has a wide range of sentence-final auxiliaries that indicate source of information, which is to say, that mark evidentiality. Predicting the exact distribution of these auxiliaries is not a trivial matter. This section has considered two issues surrounding the semantic property of evidentiality, namely the nature of indirect evidentiality and the level of meaning to which evidential morphemes contribute. As for the nature of indirect evidentiality, McCready and Ogata (2007) appeal to subjective probability in defining evidencehood, which, as we have seen, cannot account for the asymmetric relationship holding between the evidence and prejacent propositions. Takubo (2009) instead offers a conditional dependence account that correctly derives the asymmetry although it makes the wrong prediction when a bi-conditional can reasonably be seen to be present in background knowledge. Davis and Hara (2014) argue that asserting *p-yoo-da* commits the speaker to the existence of a resulting effect caused by *p*, and it thus does not commit her to the truth of the prejacent proposition *p*. As for the second issue, evidentials are often analyzed as presupposition triggers (Izvorski 1997; Matthewson et al. 2007), but Hara and Davis (2013) show that treating Japanese sentence-final auxiliaries as presupposition triggers gives rise to a number of problems and propose instead that Japanese evidential morphemes are dynamic context shifters in the sense of Davis et al. (2007) which engage in an OT-style competition with other sentence-final morphemes.

In the following two sections, we will consider other linguistic categories that give rise to evidential meaning, in particular causal connectives and prosody. As mentioned in Section 1, these two categories do not traditionally fall under the domain of the study of evidentiality, as do sentence-final auxiliaries like *yoo-da* discussed in the previous sections. Nevertheless, their distribution and interpretation provide important insights into a more comprehensive understanding of evidentiality.

## 3 Causal connectives (Tenny 2006)

Section 2.2.3 presented the proposal of Davis and Hara (2014) that the indirect evidence relevant to evidentials is the resulting effect of a cause-effect dependency. Thus, by uttering *p-yoo-da*, the speaker is inferring the cause *p* from evidence *e* and her background knowledge that '*p* causes *e*.' In other words, the indirect evidential *yoo-da* marks the cause event of a cause-effect dependency. The question then arises as to whether a prototypical causal marker also give rise to evidential meaning. Tenny

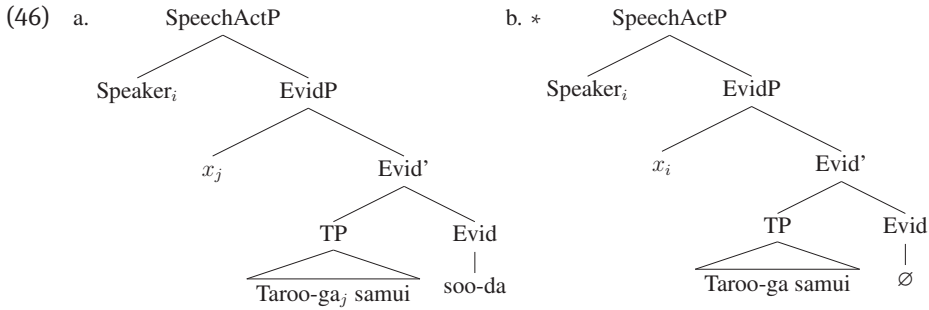


(2006) in fact proposes that the Japanese causal connective *node* gives rise to just such meaning.

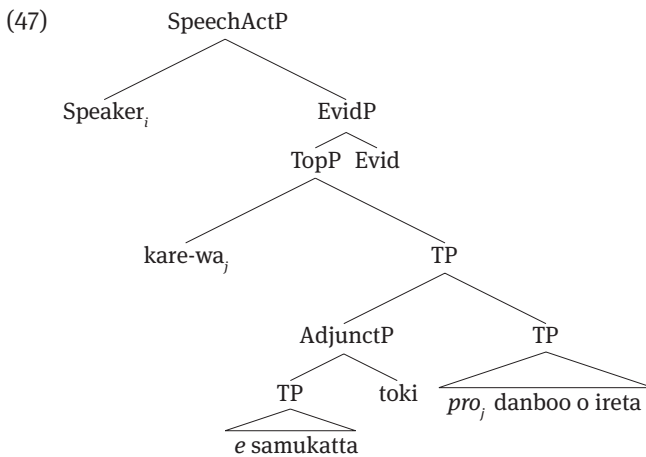
As seen earlier in (2), one of the characteristics of Japanese evidential morphemes is that they lift the person constraint on predicates of direct experience. Sentence-final auxiliaries are not the only category having such a property. As shown by Tenny (2006), the Japanese causal connectives *kara/node* are also able to lift the person constraint. As an illustration, consider the following pair of examples from Tenny (2006). In (45a), where the adjunct clause is headed by the temporal *toki*, the predicate *samui* ‘cold’ can only be interpreted non-thematically, ‘it was cold.’ That is, it cannot be interpreted as taking the third person *kare* as experiencer. In (45b), on the other hand, both non-thematic and thematic interpretations are possible.

- (45) a. *Kare wa samu-katta toki danboo o ire-ta.*  
           he TOP be.cold-PST when heater ACC turn.on-PST  
           ‘When it was cold, he would turn on the heat.’  
           \*‘When he felt cold, he would turn on the heat.’
- b. *Kare wa samu-katta node danboo o ire-ta.*  
           he TOP be.cold-PST because heater ACC turn.on-PST  
           ‘Because it was cold, he turned on the heat.’  
           ‘Because he felt cold, he turned on the heat.’ (Shinko Tamura, p.c. to Tenny 2006)

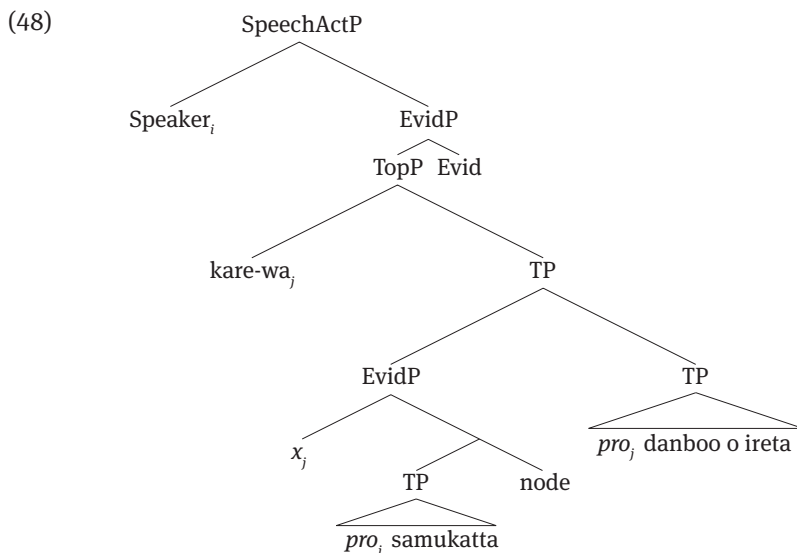
Given this contrast, Tenny (2006) argues that the syntax and semantics of *node* involve evidentiality. In particular, Tenny (2006) proposes an account involving grammaticized speech acts in the sense of Speas and Tenny (2003). Consider the following trees as an illustration. The direct experience predicate *samui* requires its subject to be identified with a seat-of-knowledge argument *x*. The hearsay evidential morpheme *soo-da* projects an Evidential Phrase (EvidP) of which the Spec position is filled with a seat-of-knowledge argument *x* that must be different from the speaker, i.e.,  $i \neq j$ . In tree (a), the subject *Taroo* is co-indexed with the seat-of-knowledge argument and the sentence is correctly predicted to be grammatical. In tree (b), by contrast, there is no evidential morpheme, and so the seat-of-knowledge argument is bound by the speech act agent, i.e., the speaker. Since the subject *Taroo* is not the same individual as the speaker, it cannot be co-indexed as required with a seat-of-knowledge argument, so this sentence is predicted to be ungrammatical.



Tenny (2006) proposes that the causal connective *node* functions also as an evidential morpheme that projects an EvidP. To illustrate, compare the tree structures of the two adjunct clauses in (45). In (47), where the AdjunctP is headed by a temporal and non-evidential *toki*, there is no evidential morpheme that can bind the subject of *samukatta*. Since the subject cannot find a local seat-of-knowledge argument, the predicate cannot be interpreted thematically.



On the other hand, the causal connective *node* projects an EvidP as in (48), providing a seat-of-knowledge argument that can bind the local subject. If this seat-of-knowledge argument is co-indexed with the matrix subject, the predicate can be interpreted thematically.



Hara (2008) observes a similar asymmetry between temporal and causal connectives with respect to the distribution of the contrastive topic *wa*.

- (49) a. *Itumo uti ni KODOMO wa ku-ru node*  
 always house GOAL children CNT come-NPST because  
*oyatu o yooi-su-ru*  
 snacks ACC prepare-do-NPST  
 ‘Because (at least) children come to our house, I always prepare snacks.’
- b. \**Itumo uti ni KODOMO wa ku-ru toki, inu*  
 always house GOAL children CNT come-NPST when dog  
*ga hoe-ru.*  
 NOM bark-NPST  
 ‘When (at least) children come to our house, the dog always barks.’

As discussed by Hara (2008), the crucial semantic difference between temporal adjuncts and causal adjuncts is that the sentence with a temporal adjunct expresses a quantification over event properties while the sentence with a causal adjunct is a relation between closed propositions (see also Johnston 1994). In other words, unlike temporal quantification, a causal relation is established when a cognitive agent perceives a particular event described in the complement sentence and causally connects the event to another event. That is, the cognitive agent relates two particular instantiated events, i. e., saturated propositions. Thus, the complement of the *because*-clause is a closed proposition, unlike the case of a temporal adjunct. The cognitive agent introduced by the causal connective *node* relating two propositions is the seat-of-knowledge/source of evidence, giving rise to evidential meaning.

Hara (2008) argues that the same reasoning explains the (un)availability of contrastive *wa* in the two adjunct clauses in (49). Simply put, the use of *wa* gives rise to a conventional implicature that the speaker thinks that it is possible that an alternative proposition is false. For instance, when uttering *Ame wa hutta* ‘It rained,’ the speaker conventionally implicates that she thinks that it is possible that it didn’t snow. In an embedded context, “the speaker” can be shifted to another attitude holder. Therefore, just as with direct experience predicates, the interpretation of a *wa*-utterance requires an information source and a closed proposition in order to calculate the conventional implicature. While the causal connective *node* can provide both, the temporal connective *toki* cannot. Therefore, the asymmetry observed in (49) obtains.<sup>22</sup>

In summary, the Japanese causal connectives *kara/node* can be regarded as a variety of evidential morphemes that introduce an attitude holder who is the source of the information denoted by the complement clause. This evidential analysis of causal connectives explains asymmetries between differing kinds of adjunct clauses with respect to the interpretation of direct experience predicates and the contrastive particle *wa*. Note however that the analysis presented here is primarily syntactic, and how this syntactic structure feeds semantic composition is yet to be seen. In particular, it is not yet entirely clear how the preadjacent proposition *p* is inferred from the source of information.

## 4 Deaccented adjectives (Hara et al. 2014)

The presence of evidentiality can also be seen in the domain of prosody. Hara et al. (2014) show that in Japanese, the deaccenting of adjectives in rising declarative questions gives rise to an evidential interpretation.

Rising negative questions like (50) express a bias meaning that parallels that of English preposed negative questions (Romero and Han 2004) and tag questions (Reese 2007). That is, the question is accompanied by an implicature that the speaker

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<sup>22</sup> As discussed in Davidson (1967) and Kratzer (1998), there are two kinds of causal relations, a singular causal statement (transparent *because*) and a causal explanation (opaque *because*).

- (i) a. I fell because the principal did. (transparent)  
 b. I went to the pageant because the principal did. (opaque) (Kratzer 1998)

Hara (2008) shows that all examples with the causal connective as an evidential are instances of opaque *because*. A transparent *because* expresses a physical and temporally-ordered relation between events, hence there is no attitude holder or cognitive agent involved in the interpretation. Therefore, it is predicted that contrastive *wa* is not available inside a transparent *because*-clause, which is indeed correct. Hara et al. (2013) also show that the distinction between the two kinds of causal relations is reflected in the distribution of *koto*-nominalized causes.

has a bias toward the affirmative answer (here, ‘Japanese vegetables are expensive.’). The rising intonation for this construction has two variants. In (50a) and Figure 2, the lexical accent of *taka’ku* (H\*+L) is retained.<sup>23</sup> In (50b) and Figure 3, the lexical accent is deleted (i. e., deaccented).

- (50)     *Nihon no yasai, takaku-na-i?*  
          Japan GEN vegetables be.expensive-NEG-NPST  
          ‘Aren’t Japanese vegetables expensive?’
- a.     *taka’ku nai* ↑  
          L%*H\*+L* L%*H*%
- b.     *takaku nai* ↑  
          %*LH*- *H*%

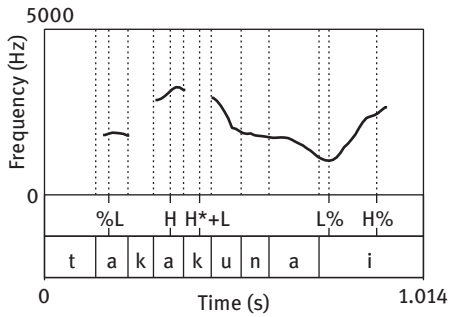
(Hara and Kawahara 2012)

Both introspection-based and experimental data suggest that the use of deaccentuation correlates with the presence of evidential meaning in the proposition embedded in the utterance (Hara and Kawahara 2008, 2014; Hara et al. 2014).<sup>24</sup> To illustrate, consider the following contexts for the negative question in (50) involving a predicate adjective. The deaccentuation is felicitous only when the conversation participants have public evidence for the affirmative answer, as in (51).

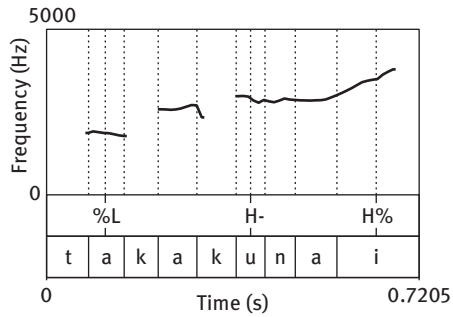
- (51)     Public Evidence Context  
          A and B are in a Japanese supermarket overseas and observe that Japanese vegetables are twice as expensive as local ones. A asks B:
- a.     *#taka’ku nai* ↑ (Accented)
- b.     ✓ *takaku nai* ↑ (Deaccented)

<sup>23</sup> In this chapter, the J ToBI system for tonal transcription (Venditti 2005) is used: H\*+L=lexical accent; L% H%=Final Rise; %L=Initial Low Boundary Tone; H-=Phrasal High Tone; H%=Final High Boundary Tone.

<sup>24</sup> See Hara et al. (2014) for experimental justification of these grammatical judgements.



**Figure 2:** Accented  
(Hara and Kawahara 2012: 354)



**Figure 3:** Deaccented  
(Hara and Kawahara 2012: 354)

In contrast, when there is no public evidence available, the accented adjective is preferred.

(52) No Public Evidence Context

A has just arrived in Hong Kong and is told by B that she can get Japanese vegetables from a Japanese supermarket. A asks B.

- a. ✓*taka'ku nai*↑ (Accented)
- b. #*takaku nai*↑ (Deaccented) (Hara and Kawahara 2012)

On the basis of introspection-based and experimental observations such as these, Hara et al. (2014) propose that deaccentuation marks the utterance as EVID, which requires a context where the interlocutors have evidence for the embedded proposition (i.e., corresponding to the content of the affirmative answer). This means that when the speaker utters a rising declarative with a deaccented adjective, the speaker is asking a question even though the evidence for the answer is already available. As a result, the question is interpreted as a meta-discourse question. That is, the speaker is not asking about the truth value of the proposition  $p$ , but rather asking about the reliability of the evidence available for  $p$ . Hara et al. (2014) formalize this intuitive characterization of deaccentuation using Barker's (Barker 2009) notion of *standard of clarity*. See Hara et al. (2014) for details.

## 5 Conclusion

Evidential meaning is present in a variety of linguistic categories in Japanese, of which this chapter has considered sentence-final auxiliaries, causal connectives, and deaccented prosody on adjectives. As our discussion has shown, evidential expressions interact with multiple subdomains of linguistics. In the realm of semantics and pragmatics, evidential morphemes implicate the presence of a cognitive agent or source of evidence and accordingly modify the speech act being performed. For instance, when making an assertion, an evidential morpheme can cause the person constraint on direct experience predicates to be lifted, and together with that the Gricean Quality constraint, by lowering the contextual threshold required for making the assertion, as discussed by Davis et al. (2007) and Hara and Davis (2013). Evidentiality also affects the act of questioning, as seen in Section 4, where we saw that deaccentuation of a negative question is capable of converting the question from an information-seeking one into a meta-discourse one. Syntactically, Tenny (2006) argues that evidential morphemes project EvidP, which contains an evidential argument in its Spec, thereby accounting for a number of asymmetries observed among adjunct clauses. Last but not least, the work by Hara et al. (2014) on deaccentuation has revealed a strong correlation between evidentiality and prosody, while at the same time raising a number of interesting questions, such as the case of Japanese adjectives that are lexically deaccented, in which case the semantic contrast is of course lost despite this strong empirically-motivated correlation. Further research into whether it is possible to mark evidentiality with these adjectives, either prosodically or non-prosodically, should bring to light another dimension of evidentiality and (de)accentuation. Questions raised by phenomena such as these indicate that no domain of linguistics should be excluded from investigation in future research on evidentiality.

## Acknowledgement

The work described in this chapter was supported by JSPS Kiban (C) (No. 18K00589). I would like to thank Christopher Davis and Magdalena Kaufmann for useful discussion on the ideas presented in this chapter.

## Additional abbreviations

CNT – contrastive, GOAL – goal, NPST – nonpast

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## 13 Presupposition and assertion

### 1 Introduction

Frege (1892) considered the meaning of the following sentence to consist of two components.

- (1) *Kepler died in misery.*

One is the proposition expressed, i.e. that Kepler died in misery, and the other is that the name “Kepler” has a reference. Although both propositions must be true for sentence (1) to be true, Frege contended that it is the former that is asserted in this sentence, arguing that if both propositions were assertions of this sentence, the negation of the sentence would mean “Kepler did not die in misery, or the name ‘Kepler’ is without nominatum [reference]” (Frege 1892: 95 in the English translation). Since the sentence “Kepler did not die in misery” does not nullify the reference of the name “Kepler,” Frege argued, the reference of the proper name is not asserted in (1) or in its denial, but is presupposed, that is, taken for granted.

The Fregean characterization of the distinction between presupposition and assertion can be restated as follows: if a sentence *s* conveys that *p* and the sentence *not s*, the negation of *s*, does not, then *p* is an assertion of *s*; if both *s* and *not s* convey that *p*, *p* is a presupposition of *s*. Though there are other operators that can distinguish presupposition from assertion (Section 2.2.1), using negation as a diagnostic for presupposition is the accepted practice in modern treatments of presupposition, providing us with a promising starting point for understanding the nature of presupposition.

Assertion, on the other hand, cannot be fully and properly characterized in the above way alone. Since assertion is a speech-act term, a proper definition of it should contrast it with other illocutionary acts such as questioning, warning, threatening etc. (see Austin 1962). Since a full treatment of illocutionary acts exceeds the scope of this chapter, however, I will limit my use of the term “assertion” here only as it is understood as contrasting with the notion of presupposition. The above characterization is also insufficient to fully characterize how assertion is similar to or different from conversational implicature (Grice 1975). There are many cases where *s* implies *p* but *not s* does not. For example, there may be contexts where (1) implies that Kepler was a bachelor but the denial of (1) does not. Assertion must therefore be defined in such a way as to include only meanings that are conveyed explicitly: “Kepler died in misery” is explicitly stated in (1) but “Kepler was a bachelor” is not. Explicitness of the meaning conveyed also provides another criterion by which to differentiate presupposition from assertion, since presuppositions, such as the proposition that

“Kepler” has a reference in (1), are likewise not normally stated explicitly. Thus, a comparison of implicature and presupposition is also necessary for properly understanding the nature of presupposition (Section 2.4).

The main objective of this chapter is to discuss presupposition-related expressions unique to Japanese. A range of such expressions are taken up in Section 3, including proper nouns, factive predicates, complementizers, *no-da*-construction, and adverbial expressions. To lay the groundwork for that discussion, some general properties of presupposition will first be considered in the next section.

## 2 Properties of presupposition

In this section, we will identify certain properties of presupposition that make it possible to more accurately delimit the class of meanings that fall under the category of presupposition. Section 2.1 will introduce some expressions that may be considered to *trigger* presuppositions. Section 2.2 discusses issues related to the *projection* of presuppositions, with particular attention to the difference between *holes*, *plugs*, and *filters* in the sense of Karttunen (1973). Section 2.3 discusses the relevance of context to presuppositions triggered by specific lexical items. Section 2.4 elaborates on the differences among implicit meanings of the kind introduced earlier in Section 1. Readers familiar with standard explanations of presupposition may wish to skip the current section and go on to Section 3.

### 2.1 Presupposition triggers

In any communicative event, we take innumerable assumptions for granted. Even in communication among non-acquaintances, there are many assumptions that are presupposed. In writing this chapter, for example, I assume propositions such as that the reader of this chapter can understand English, has an interest in semantics and pragmatics, wants to learn something about Japanese, etc. It can well be imagined that interlocutors who know each other well can take advantage of far more assumptions than these as taken for granted.

Although it is undeniable that there are many presupposed assumptions present at the start of a conversation, many of those assumptions have no relevance to the sentences actually uttered. Given that linguistic research has traditionally been interested in relationships of meaning among sentences such as entailment, contradiction etc., the kinds of presupposition most discussed in the literature have been those that directly relate to the truth of a sentence. When “Kepler” has no reference, for example, is it true that Kepler died in misery? As is evident from this example, presuppositions that relate to the truth of a sentence frequently arise from particular lexical items

included in that sentence, in this case *Kepler*, and expressions or constructions carrying such presuppositions have been called in the literature *presupposition triggers*.

Among the many kinds of presupposition triggers, some select examples are given below to illustrate the wide variation found among such forms. The following lexical classes and constructions are adapted from Levinson (1983), Abbott (2006), and Beaver and Geurts (2011), with Japanese examples of each provided by the current author. In each example, the sentence in (a) has the presupposition in (b).

- **Factive predicates** such as *siru* ‘come to know’, *kuyamu* ‘regret’, etc. presuppose the truth of their propositional complement.

- (2) a. *Taroo wa Ziroom ga dekake-ta koto o*  
 Taro TOP Jiro NOM go.out-PST COMP ACC  
*sit-tei-ru.*  
 come.to.know-RES-NPST  
 ‘Taro knows that Jiro went out.’

- b. *Ziroom ga dekake-ta.*  
 Jiro NOM go.out-PST  
 ‘Jiro went out.’

- **Change of state verbs** such as *yameru* ‘stop,’ *owaru* ‘finish,’ *tuzukeru* ‘continue’ etc. place presuppositional requirements on the initial state.

- (3) a. *Taroo wa tabako o sui-owat-ta.*  
 Taro TOP cigarette ACC smoke-finish-PST  
 ‘Taro finished (smoking) the cigarette.’

- b. *Taroo wa tabako o sut-tei-ta.*  
 Taro TOP cigarette ACC smoke-PROG-PST  
 ‘Taro was smoking a cigarette.’

- **Sortally restricted predicates** presuppose that the subject has some relevant characteristics: *Nihon no syusyoo* ‘the prime minister of Japan,’ for example, must have Japanese citizenship as a precondition.
- **Cleft sentences** in Japanese are expressed by *X no-wa Y-da* where *Y* is the clefted material, and it is presupposed that there exists an entity which has the property *X*.

- (4) a. *Taroo ga kenkyuu-si-tei-ru no wa zentei*  
 Taro NOM research-do-PROG-NPST NMLZ TOP presupposition  
*da.*  
 COP.NPST  
 ‘What Taro is researching is presupposition.’

- b. *Taroo wa nanika o kenkyuu-si-tei-ru.*  
 Taro TOP something ACC research-do-PROG-NPST  
 ‘Taro is researching something.’
- **Focus intonation** carries a presupposition that there is an entity occupying the focused position with the relevant property. In Japanese, the word following the focus is deaccented, i. e. the peak of the pitch is significantly reduced.
- (5) a. **TAROO GA** *zentei o kenkyuu-si-tei-ru.*  
 Taro NOM presupposition ACC research-do-PROG-NPST  
 ‘It is Taro who is researching presupposition.’
- b. *Dareka ga zentei o kenkyuu-si-tei-ru.*  
 someone NOM presupposition ACC research-do-PROG-NPST  
 ‘Someone is researching presupposition.’
- **Definite descriptions** presuppose the existence of their referent. Although Japanese lacks definite articles, the NP marked by the topic marker *wa* must be definite.
- (6) a. *Huransu no kokuoo wa kasiko-i.*  
 France GEN king TOP be.wise-NPST  
 ‘The king of France is wise’
- b. *Huransu ni wa kokuoo ga i-ru.*  
 France LOC TOP king NOM exist-NPST  
 ‘There is a king of France.’
- **Additives** such as *mo* presuppose the existence of another individual who has the same property. Additive meaning can also be expressed by adverbs such as *mata* ‘again’ and affixes such as *sai-* ‘re-’.
- (7) a. *Taroo mo paatii ni it-ta.*  
 Taro also party ALL go-PST  
 ‘Taro went to the party, too.’
- b. *Taroo no hoka-ni dareka ga paatii ni it-ta.*  
 Taro GEN other-ADV someone NOM party ALL go-PST  
 ‘Someone other than Taro went to the party.’

It is clear even from this small sample how pervasive presuppositions are and what a wide and grammatically diverse range of forms and constructions can act as presupposition triggers.

## 2.2 Projection

When a trigger is embedded under the scope of a semantic operator, the triggered presupposition may or may not become the presupposition of the entire sentence, a phenomenon called the *projection problem*. When a presupposition is projected beyond the semantic operator and becomes a presupposition of the entire sentence, the operator is called a *hole*. Other operators prevent the triggered presupposition from projecting to the entire sentence and are in that case said to *plug* the presupposition. We will consider examples of such operators in Section 2.2.1 and 2.2.2, respectively, and in Section 2.2.3 we will take up a third category of operators called *filters*, which behave sometimes like holes and sometimes like plugs.

### 2.2.1 Holes

As noted at the outset of this chapter, the presupposition that a name such as “Kepler” has a reference survives negation, which means that negation is a hole-operator. Other operators that allow a presupposition to be projected include questions, modals, and conditionals, among others. For example, not only the sentence in (2a) but also the sentences in (8), where (2a) is embedded under hole-operators such as the above, presuppose the truth of the proposition that Jiro went out.

- (8) a. *Taroo wa Ziroo ga dekake-ta koto o*  
 Taro TOP Jiro NOM go.out-PST COMP ACC  
*sir-ana-i.*  
 come.to.know-NEG-NPST  
 ‘Taro does not know that Jiro went out.’ (negation)
- b. *Taroo wa Ziroo ga dekake-ta koto o*  
 Taro TOP Jiro NOM go.out-PST COMP ACC  
*sit-tei-ru* **no?**  
 come.to.know-RES-NPST NMLZ  
 ‘Does Taro know that Jiro went out?’ (question)
- c. *Taroo wa Ziroo ga dekake-ta koto o*  
 Taro TOP Jiro NOM go.out-PST COMP ACC  
*sit-tei-ru* **kamosirenai.**  
 come.to.know-RES-NPST may  
 ‘Taro may know that Jiro went out.’ (modal)



- d. *Ziroo ga dekake-ta koto o sit-tara, Taroo*  
 Jiro NOM go.out-PST COMP ACC come.to.know-COND Taroo  
*wa odorok-u daroo.*  
 TOP become.surprised-NPST CONJEC  
 ‘If Taro finds out that Jiro went out, he will be surprised.’ (conditional antecedent)

Even when the assertion in (2a), i.e. Taro’s knowledge about the fact that Jiro went out, is negated, questioned, modalized, or conditionalized as in (8), the truth of the propositional complement of the factive verb *siru* ‘come to know,’ i.e. “Jiro went out,” is not affected. Thus, hole-operators operate in a way that discriminates between presuppositions and assertions.

Although negation is the means most widely used to test the presuppositional status of a meaning, as noted in Section 1, there are cases where triggers do not fall within the scope of negation. Consider (9a), in which the sentence (7a) is used with the negative operator, but the NP with the trigger escapes from the scope of the negation. As a result, the presupposition triggered by *mo* is not (7b) but rather the denial of it, i.e. ‘Someone other than Taro did not go to the party.’

- (9) a. *Taroo mo paatii ni ik-ana-katta.*  
 Taro also party ALL go-NEG-PST  
 ‘Taro did not go to the party, either.’  
 b. *Taroo mo paatii ni it-ta no?*  
 Taro also party ALL go-PST NMLZ  
 ‘Did Taro go to the party, too?’

The use of other operators might work as a diagnostic for presupposition in such cases. For example, the question operator scopes over the constituent with *mo* in (9b) and the sentence still entails the truth of (7b), which leads to the conclusion that (7b) is a presupposition of (7a). This shows the importance of taking scope into consideration when testing presuppositions with holes.

### 2.2.2 Plugs

Plugs are semantic operators that block the projection of presuppositions. Verbs of saying and non-factive attitude predicates are examples of linguistic forms that have such a function. The complement clauses in (10) indicated by [ ], for example, have the presuppositions “it was raining (earlier)” and “Taro has a wife,” respectively. These presuppositions do not, however, necessarily become presuppositions of the main clauses here.

- (10) a. *Taroo wa [ame ga yan-da] to sinzi-tei-ru*  
 Taro TOP rain NOM stop-PST QUOT believe-RES-NPST  
*yoo da.*  
 EVID COP.NPST  
 ‘Taro seems to believe that it stopped raining.’
- b. *Taroo wa [tuma to eiga ni ik-u] to*  
 Taro TOP wife COM movie ALL go-NPST QUOT  
*minna ni it-ta.*  
 everyone DAT say-PST  
 ‘Taro said to everyone that he was going to a movie with his wife.’

As a result, (10a) and (10b) can be followed respectively by (11a) and (11b), which deny the presuppositions embedded in the plugs.

- (11) a. *Demo ame wa hut-tei-na-katta.*  
 but rain TOP fall-PROG-NEG-PST  
 ‘But it wasn’t raining.’
- b. *Demo Taroo wa kekkon-si-tei-na-i.*  
 but Taro TOP get.married-do-RES-NEG-NPST  
 ‘But Taro isn’t married.’

Since the speaker of sentences such as (10) need not commit herself to the content of the embedded clause, ascribing it to the matrix subject, she can deny not only the assertion of the embedded sentence but also its presupposition.

### 2.2.3 Filters

Filters are semantic operators that behave sometimes like holes and sometimes like plugs. As an example let us consider the case of conditionals. The antecedent of a conditional acts as a hole, as seen in Section 2.2.1, but the consequent, to the contrary, acts as a filter: when the antecedent of a conditional entails the presupposition of its consequent, the presupposition is plugged, but otherwise, it is projected. For example, the consequents of (12a) and (12b) carry a presupposition that Taro used to smoke. While this is also a presupposition of the entire sentence in (12a), it is blocked from being the presupposition of the whole sentence in (12b), where the antecedent entails the presupposition. Thus, consequent clauses of conditionals act as presupposition filters.

- (12) a. *Taroo ga byooki o si-ta nara, moo tabako o*  
 Taro NOM disease ACC do-PST COND already cigarette ACC  
*yame-tei-ru daroo.*  
 quit-RES-NPST CONJEC  
 ‘If Taro has contracted a disease, he would already have quit smoking.’
- b. *Taroo ga tabako o sut-tei-ta nara, moo*  
 Taro NOM cigarette ACC smoke-PROG-PST COND already  
*yame-tei-ru daroo.*  
 quit-RES-NPST CONJEC  
 ‘If Taro used to smoke, he would already have quit smoking.’

Other logical connectives similarly exhibit the behavior of filters: conjunctions exhibit the same pattern as conditionals, but disjunctions exhibit a slightly different pattern. Only when the first disjunct entails the *negation* of the presupposition of the second disjunct does that presupposition fail to project to the entire sentence, as shown in example (13).

- (13) *Taroo wa tabako o suw-ana-i ka, moo*  
 Taro TOP cigarette ACC smoke-NEG-NPST or already  
*yame-tei-ru ka da.*  
 quit-RES-NPST or COP.NPST  
 ‘Taro does not smoke or has already quit smoking.’

## 2.3 Presupposition and context

Presuppositions that are triggered by specific words and constructions are called *semantic (conventional) presuppositions*. We noted in Section 2.1 that participants in a conversation share innumerable assumptions not encoded in specific words or constructions in the sentences they utter. Assumptions taken for granted such as these are called *pragmatic (speaker) presuppositions* (Stalnaker 1974).

This terminological distinction, however, does not necessarily mean that the presupposition triggered by a specific lexical form or construction has no relevance to the preceding context. Stalnaker (1974) argued that presuppositions in general should be understood purely in pragmatic terms: the triggering of presuppositions can be explained as a consequence of general conversational rules, and they are considered to constrain the context in which the sentence is uttered. This means that if a presupposition *p* is triggered in a sentence *s*, then the context *c* in which *s* is uttered must entail *p*. When the context *c* does not entail the presupposition *p*, the utterance of *s* is inappropriate in *c* unless some adjustment is made, such as *p* being canceled (Gazdar 1979) or accommodated in some way in *c* (Karttunen 1974, Lewis 1979, Heim 1982).

Such a dynamic semantic approach also regards presuppositions as constraints on the context of utterance, although understood to arise from the meaning of triggers. As an example of how this approach is helpful in understanding how context interacts concretely with triggered presuppositions, we will consider here Karttunen's (1974) account of the filtering effect of conditionals.

Karttunen (1974) defines the relation of satisfying-the-presupposition-of (written as  $\triangleright$ ) as in (14a), and the condition where the presupposition of conditionals is satisfied as in (14b), where  $\pi$  represents a function that generates from a simple sentence the set of presuppositions associated with it,  $s_1'$  is the proposition expressed by the sentence  $s_1$ , and  $\models$  stands for "entails."<sup>1</sup>

- (14) a.  $c \triangleright s$             iff  $c \models \pi(s)$   
       b.  $c \triangleright \text{if } s_1, s_2$     iff  $c \triangleright s_1$  and  $c \cup \{s_1'\} \triangleright s_2$

As (14a) shows, the satisfaction of the presupposition of a simple sentence is an entailment relation between a context and the presupposition: if and only if the context entails the presuppositions of  $s$ , it satisfies-the-presupposition-of  $s$ . The satisfaction condition for a conditional sentence is different in the case of the antecedent and the consequent, as seen in (14b). While the condition for satisfying the presupposition of the antecedent is the same as that for a simple sentence, i.e.  $c \triangleright s_1$ , it is the new context produced by adding the proposition expressed by  $s_1$ , i.e.  $c \cup \{s_1'\}$ , that satisfies the presupposition of the consequent  $s_2$ . This means that the initial context  $c$  does not need to include a presupposition of  $s_2$  when it is entailed by  $s_1$ , a filtering effect observed above in (12b) (see also Heim 1983 for an elaboration on the ideas of Karttunen 1974).

Another type of dynamic treatment of presuppositions posits conversational contexts that include discourse markers for propositions. In such theories, the entailment relation in (14a) can be interpreted as an anaphoric relation between a discourse marker and the presupposition triggered by a sentence. It is van der Sandt (1989, 1992) who has most compellingly made the case for this relationship, claiming that all presuppositions are anaphoric. The sentences in (15), for example, illustrate the close connection existing between anaphoric pronouns and presupposition triggers. Just as an anaphoric pronoun is preceded by its antecedent, as in (15a) and (15b), the trigger must be preceded by the content of its presupposition, as in (15c) and (15d) (cf. Beaver and Geurts 2011).

<sup>1</sup> The symbolism here follows that of Beaver (2001).

- (15) a. *Otoko<sub>i</sub> ga hait-te ki-ta. Soitu<sub>i</sub> wa inu o*  
 man NOM enter-GER come-PST he TOP dog ACC  
*ture-tei-ta.*  
 take.along-PROG-PST  
 'A man came in. He had his dog along with him.'
- b. *#Soitu<sub>i</sub> wa inu o ture-tei-ta. Otoko<sub>i</sub> ga*  
 he TOP dog ACC take.along-PROG-PST man NOM  
*hait-te ki-ta.*  
 enter-GER come-PST  
 'He had his dog along with him. A man came in.'
- c. *Taroo wa dekake-ta<sub>i</sub>. Jiroo wa Taroo ga dekake-ta<sub>i</sub>*  
 Taro TOP go.out-PST Jiro TOP Taro NOM go.out-PST  
*koto o sit-tei-ru.*  
 COMP ACC come.to.know-RES-NPST  
 'Taro went out. Jiro knows that Taro went out.'
- d. *#Jiroo wa Taroo ga dekake-ta<sub>i</sub> koto o*  
 Jiro TOP Taro NOM go.out-PST COMP ACC  
*sit-tei-ru. Taroo wa dekake-ta<sub>i</sub>.*  
 come.to.know-RES-NPST Taro TOP go.out-PST  
 'Jiro knows that Taro went out. Taro went out.'

Van der Sandt (1989, 1992) provides an account of this parallel by positing a constraint on the structural relationship between anaphoric pronouns/triggers and their antecedents within the framework of Discourse Representation Theory, a dynamic system proposed in Kamp (1981) and Kamp and Reyle (1993). Though constraints of space do not allow us to go into the details of the mechanisms he proposes, the above examples suffice to illustrate the importance of the role of context in interpreting a presupposition even when it is semantically triggered by a specific item.

## 2.4 Presupposition vs implicature

The status of a presupposition with respect to a given context contrasts sharply with that of a conversational implicature (Grice 1975).<sup>2</sup> Given a context *c* and a sentence *s*, the presuppositions of *s* must be included in *c* for *s* to be felicitous, as stated above. On the contrary, conversational implicatures are newly obtained by adding *s* to the context *c* and thus not included in *c*. This contrast leads to the difference between these noted in the introduction. Since the presupposition of a sentence *s* constitutes a

<sup>2</sup> See also Tomioka (this volume) for a discussion of conversational implicature in Japanese.

part of the preceding context *c*, which is taken for granted, it cannot be negated. On the other hand, the same implicature *p* cannot be obtained from contradictory statements; that is, negating the sentence *s* necessarily affects the implicature it induces. This is because if *p* is implied by both *s* and *not s*, *p* holds in *c* regardless of the content of *s*, and therefore in such cases *p* is not newly obtained by the addition of *s* to *c*.

Another difference between presuppositions and conversational implicatures lies in their cancelability. Since presuppositions are taken for granted in uttering a sentence, they resist being canceled, except when embedded within a plug-operator, as shown in (16a) below. On the other hand, conversational implicatures can be canceled effortlessly, as in (16b). Since a conversational implicature is not part of the preceding context, an implicature that is induced by a sentence is always negotiable.

- (16) a. *Ame ga yan-da. #Demo ame wa hut-tei-na-katta.*  
 rain NOM stop-PST but rain TOP fall-PROG-NEG-PST  
 'It stopped raining. #But it was not raining.'
- b. *Ame ga yan-da. Demo soto ni wa de-na-i.*  
 rain NOM stop-PST but outside ALL TOP  
 go.out-NEG-NPST  
 'It stopped raining. But I won't go outside.'

In (16b), the conjunction *demo* 'but' indicates that, by adding the prior sentence to the context, the implication is created that the speaker will go out.

Another class of meaning distinct from presupposition is conventional implicature. Although Grice (1975: 45) noted that "some implicatures are conventional," it has been questioned whether there exists such a distinct class of meaning (Bach 1999). But recent studies, especially a series of papers by Christopher Potts (Potts and Kawahara 2004, Potts 2005), have reasonably identified a domain of meaning that is different from assertion, presupposition, and conversational implicature.

Conventional implicature is more similar to presupposition than to assertion and conversational implicature in that it can be projected through presupposition holes. Consider the politeness of the morpheme *-mase/masu* in (17) as an example of conventional implicature: even when this form is negated or questioned, the speaker's level of politeness toward the addressee remains unchanged.

- (17) a. *Ame wa hut-tei-mase-n.*  
 rain TOP fall-PROG-POL-NEG.NPST  
 'It's not raining.'
- b. *Ame wa hut-tei-mas-u ka?*  
 rain TOP fall-PROG-POL-NPST Q  
 'Is it raining?'

It is difficult to say, however, that such polite meaning is presupposed in the discourse. Rather, such meaning seems to be expressed in the sentences themselves that contain the honorific expressions.

This intuition is confirmed by the independence of the truth value of a conventional implicature from its assertive content (Potts 2005: 32). That is, even if the use of polite expressions is inappropriate, e. g. because of a friendly relationship between the interlocutors, the sentence in (17a) is judged to be true if it is not raining. On the other hand, presuppositions must be satisfied as a prerequisite for a sentence to be true or false, that is, to have a truth value at all. Therefore, if its presupposition is not satisfied, then a sentence is predicted to be neither true nor false, but to constitute a case of presupposition failure. Thus, conventional implicatures are independent of the truth value assigned to a sentence whereas presuppositions are not.

Another difference between conventional implicatures and presuppositions is the ability of presuppositions to be backgrounded in a discourse. Since presuppositions are a set of formerly assumed facts, they can be asserted in the preceding text as in (18) (see also the example (15c)).

- (18) *Ame ga hut-ta. Sosite ame ga yan-da.*  
 rain NOM fall-PST then rain NOM stop-PST  
 ‘It rained. And then it stopped raining.’

On the other hand, it is quite strange to assert the implication of politeness in the discourse preceding a polite expression, as shown by (19).

- (19) *#Watasi wa anata ni keii o hara-u. Ame ga*  
 1SG TOP 2SG DAT respect ACC pay-NPST rain NOM  
*hut-tei-mas-u.*  
 fall-PROG-POL-NPST  
 ‘I respect you. It’s raining.’

Since the conventional meaning of *-masu* is expressed by the sentence in which it appears, it cannot be properly understood to participate in an anaphoric relationship.<sup>3</sup>

<sup>3</sup> The inappropriateness of (19) is also due to the “descriptive ineffability” of the expressive meaning of *-masu* (Potts and Kawahara 2004). Despite certain salient characteristics that conventional implicatures appear to have, it is still a matter of debate where a distinction should be drawn between presuppositions and conventional implicatures (see Potts 2015 and the references therein for details). It is worth noting in this connection that Sudo (2012) claims that the meaning of subject honorifics in Japanese is not a conventional implicature, but a presupposition.

Based on such evidence, the meaning of honorifics can be considered to belong to a distinct class of meaning from presupposition, that of conventional implicature.

## 2.5 Summary

We began this section with a consideration of some examples of presupposition triggers and then saw how presuppositions associated with them interact with semantic operators called holes, plugs, and filters. We also discussed presupposition as a discourse phenomenon, showing how semantic presuppositions associated with specific lexical items or constructions are pragmatically presupposed in discourse. This pragmatic status of presuppositions plays an important role in differentiating presuppositions from implicatures.

## 3 Presupposition-related expressions in Japanese

Based on the properties introduced in Section 2, we will consider in this section four presupposition-related expressions in Japanese: proper nouns (3.1), factive predicates and complementizers (3.2), the backgrounding operator *no-da* (3.3), and adverbial expressions (3.4). The expressions dealt with in this chapter are rather heterogeneous, partly reflecting the heterogeneous nature of presupposition triggers themselves, but having in common the characteristic of exhibiting behaviors that are not straightforwardly attested in English.

### 3.1 Use of proper nouns

As noted in Section 1, proper nouns presuppose the existence of their referent. This seems to be the case also in Japanese. It is natural, for example, to interpret the examples in (20) as taking the existence of *Yamada* for granted: presupposition holes such as negation and questions cannot target the existence of the referent.

- (20) a. *Yamada ga ko-na-i.*  
           Yamada NOM come-NEG-NPST  
           ‘Yamada isn’t coming.’
- b. *Yamada ga ki-ta?*  
           Yamada NOM come-PST  
           ‘Did Yamada come?’



The presuppositional status of referential existence is also supported by the back-grounding property of such meaning. Introducing the existence of *Yamada* in the preceding text does not distort the discourse, as seen in (21), suggesting that it is not a conventional implicature, but a presupposition.<sup>4</sup>

- (21) *Konomae at-ta Yamada ga i-ru daroo? Ano*  
 recently meet-PST Yamada NOM exist-NPST CONJEC that  
*Yamada ga ku-ru yo.*  
 Yamada NOM come-NPST SFP  
 ‘Do you remember the Yamada we met recently? That Yamada is coming.’

The existential presupposition borne by a proper noun can be canceled by embedding it under a plug-operator, but it is more natural in such a case for the proper noun to be marked with the form *toyuu N* or *nante N* ‘a N called ...’ where *N* is a common noun, as illustrated in (22).

- (22) *Taroo wa Yamada toyuu hito ga ku-ru to*  
 Taro TOP Yamada QUOT person NOM come-NPST QUOT  
*sinzi-tei-ru. Demo Yamada nante yatu wa*  
 believe-RES-NPST but Yamada QUOT guy TOP  
*i-na-i.*  
 exist-NEG-NPST  
 ‘Taro believes that a person called Yamada is coming. But no such person as Yamada exists.’

As the second sentence in (22) indicates, *nante N* makes cancellation possible even without the use of a plug-operator. In this context, it is obligatory to attach *toyuu/nante N* when canceling the existential presupposition, as the following pair illustrates: (23b) can only be interpreted to mean that the person in question has gone somewhere else, not that s/he does not exist.

- (23) a. *Yamada toyuu hito wa i-na-i.*  
 Yamada QUOT person TOP exist-NEG-NPST

<sup>4</sup> (21) might sound a little unnatural. This may be because it is unusual to introduce the existence of a person who is already known by the interlocutors. But the sequence of the sentences in (21) does not sound redundant at least, and, moreover, is quite acceptable in some varieties of Japanese.

- (i) *Yamada i-ru yaro? Yamada (mo) ku-ru de.*  
 Yamada exist-NPST CONJEC Yamada (also) come-NPST SFP  
 ‘You know Yamada? Yamada also is coming.’ (Osaka dialect of Japanese)

- b. #*Yamada wa i-na-i.*  
 Yamada TOP exist-NEG-NPST  
 ‘No person Yamada exists.’

Thus, while the bare use of a proper noun robustly presupposes the existence of its referent, that existential presupposition can be called off with the attachment of *toyuu N*.

Canceling presupposition is not the only purpose for using *toyuu N* with proper nouns. When both the speaker and the addressee directly know the referent, proper nouns are used without *toyuu N*, as in (24).

- (24) A: *Konomae at-ta Yamada ga ku-ru yo.*  
 recently meet-PST Yamada NOM come-NPST SFP  
 ‘Yamada, whom we met recently, is coming.’  
 B: *Yamada-san wa mada dokusin?*  
 Yamada-Mr. TOP still single  
 ‘Is Mr. Yamada still single?’

On the other hand, when the speaker or the addressee do not know the person in question, the speaker must use *toyuu N*. In (25), adapted from Takubo and Kinsui (1997), not only speaker B, who has not met Yamada yet, but also speaker A, a friend of Yamada, must attach *toyuu N* to the proper noun being used.

- (25) A: *Boku no yuuzin ni Yamada toyuu hito ga i-ru.*  
 1SG GEN friend DAT Yamada QUOT person NOM exist-NPST  
 ‘I have a friend, Yamada.’  
 B1: *Yamada toyuu hito wa mada dokusin?*  
 Yamada QUOT person TOP still single  
 B2: #*Yamada-san wa mada dokusin?*  
 Yamada-Mr. TOP still single  
 ‘Is Mr. Yamada still single?’

While the individual in question, once introduced into the context, can be referred to by speaker A without attaching *toyuu N*, it is not permitted for speaker B to use the bare proper noun during the same discourse. Thus, Takubo and Kinsui (1997) conclude that it is necessary for the speaker to know the person directly in order to use a bare proper noun in Japanese.

Although Takubo and Kinsui (1997) account for the obligatoriness of attaching *toyuu N* to a proper noun in utterances such as those of A in (25), by simply assuming that common nouns must be used to introduce a person who is not known by the addressee, I consider this constraint to be the result of presupposition failure. That

is, the use of bare proper nouns is appropriate in Japanese if and only if the speaker directly knows the referent and its existence is presupposed in the context, but since the existence of *Yamada* is not established between the discourse participants in the prior discourse of (25)-A, the use of the proper noun is excluded in this case. Once the existence of *Yamada* is asserted as in (25)-A, however, the utterance by B in (25) can be followed up by an utterance by A that uses a bare proper noun, as in (26).

- (26) A: *Yamada-san wa moo kekkon-si-tei-ru yo.*  
           Yamada-Mr. TOP already get.married-do-RES-NPST SFP  
           ‘Mr. Yamada is already married.’

Note that the term “context” in this discussion is not limited to sentences uttered earlier in the current discourse. Since *Yamada* is mutually known to the speaker and the addressee in a case such as (24), the speaker can take the existence of him/her for granted in that context.

Given that a bare proper noun can only be used when it refers to an object presupposed in the context, it follows from the strangeness that would result from using a bare proper noun in (25)-A that *Yamada* has no reference yet in that context. The lack of a reference for a proper noun can be observed in the possibility of denial of the person’s existence, as in (23a). What would a proper noun denote in such a context? I conjecture that a proper noun such as *Yamada* is used in that case as denoting the property of being a name, rather than denoting the referent of the name, as reflected in the composition of *toyuu* as consisting of the quotative marker *to* and the verb of saying *yu*. *Yamada toyuu hito* can, that is, be understood to mean ‘a person whom (people) call Yamada.’

In English, on the other hand, it is possible to use a bare proper noun in a context such as (25).

- (27) A: *I have a friend, Yamada.*  
       B: *Is Yamada single?*

This raises the question of what the status is of proper nouns in English. I suspect that there are two possible answers. One is that the proper noun is used as a common noun representing a name, as in Japanese; the other is that it refers to an object known to exist only to the speaker. If the latter is the case, it raises the question of whether a set of propositions and referents holding for only one of the interlocutors can be regarded as a “context” satisfying a presupposition. The following quote from Stalnaker (1974) suggests that context should be interpreted as a set of assumptions (that are construed by the speaker to be) shared among the discourse participants.

A proposition *P* is a pragmatic presupposition of a speaker in a given context just in case the speaker assumes or believes that *P*, assumes or believes that his addressee assumes or believes that *P*, and assumes or believes that his addressee recognizes that he is making these assumptions, or has these beliefs. (Stalnaker 1974: 49)

If the context is identified as knowledge shared in common between the speaker and the addressee, it follows that Japanese is more sensitive to pragmatic presuppositions than English insofar as the use of proper nouns is concerned, because such nouns can be used in their bare form in Japanese only after the existence of their referent has become established in the current context.

### 3.2 Factive predicates and the complementizer *koto*

As noted in Section 2.1, predicates such as *siru* ‘come to know’ and *kuyasigaru* ‘show regret’ presuppose the truth of their propositional complements. As observed by Kuno (1973), however, the choice of complementizers affects the presupposition of those predicates. An example of a factive predicate that can take either complementizer *koto* or *to* is illustrated in (28).

- (28) a. *Taroo wa siai ni make-ta koto o kuyasigat-ta.*  
           Taro   TOP game   DAT lose-PST COMP ACC show.regret-PST  
       b. *Taroo wa siai ni make-ta to kuyasigat-ta.*  
           Taro   TOP game   DAT lose-PST QUOT show.regret-PST  
           ‘Taro was vexed that he lost the game.’

While it can naturally be inferred in (28a) that the interlocutors agree that Taro lost the game, it might be the case that Taro misunderstood the result of the game in (28b). Thus, the fact that he lost the game is presupposed in (28a) whereas it is not necessarily presupposed in (28b). Surveying various examples where *koto* and *to* can and cannot be interchanged, Kuno (1973) claims that *koto* is used when the proposition it attaches to is presupposed to be true.

Another piece of evidence which suggests the relevance of *koto* to the existence of a presupposition is found in its use with NP’s. Kurafuji (1998) observes that while the common noun in Japanese has a definite or indefinite interpretation depending on the context, as in (29a), it is interpreted only as a definite NP when *koto* is attached, as in (29b).

- (29) a. *Zyon wa kyoozyu ga suki da.*  
           John TOP professor NOM like COP.NPST  
           ‘John likes {professors/a professor/the professor}.’  
       b. *Zyon wa kyoozyu no koto ga suki da.*  
           John TOP professor GEN matter NOM like COP.NPST  
           ‘John likes the professor.’

Since the definite interpretation necessitates that the existence of the referent have been established in the previous discourse, it has a property in common with the *koto* attached to a sentence, which requires that a particular fact have been established in the previous context. Such observations might lead one to assume that *koto* is a presupposition trigger that is responsible for the factive presupposition in (28a) rather than the factive predicate used in that sentence.

There is, however, negative evidence against viewing *koto* as a trigger of presuppositions. Takubo (2007) argues that when attached to an NP, *koto* makes the NP just specific rather than definite, as shown by the fact that *kyoozyu* ‘professor’ in (29b) can be modified by a proper noun with *toyuu*, as in (30).

- (30)     *Zyon wa Maria toyuu kyoozyu no koto ga suki*  
            John TOP Maria QUOT professor GEN matter NOM like  
            *rasi-i.*  
            EVID-NPST  
            ‘It seems that John likes a professor named Maria.’

As discussed in Section 3.1, *toyuu N* is typically used when the speaker first introduces a referent into the discourse, so the most salient interpretation of *Maria toyuu kyoozyu* is as an indefinite NP, though it is specific.

As for the sentence-taking *koto*, there are many patterns that do not exhibit the factivity of the sentence to which *koto* is attached: (31a) is an example which Kuno (1973: 219) admits involves no presupposition, and (31b) is a revised version of an example given in Masuoka (2007: 31) that similarly involves no presupposition.

- (31) a. *Eigo o hanas-u koto wa muzukasi-i.*  
            English ACC speak-NPST COMP TOP be.difficult-NPST  
            ‘It’s difficult to speak English.’  
        b. *Tantoosya ga gyoosya kara wairo o morat-ta*  
            one.in.charge NOM contractor ABL bribe ACC receive-PST  
            *toyuu koto wa na-i.*  
            QUOT COMP TOP exist.NEG-NPST  
            ‘It’s not the case that the person in charge received a bribe from the contractor.’

It is clear from these examples that *koto* alone is not sufficient to guarantee the factivity of a proposition. This then leaves open the question as to what is responsible for the factive presupposition present in (28a) and what makes the example with *koto* in (28a) different from the example with *to* in (28b).

The lack of a factive presupposition in (28b) can be accounted for by assuming *to* to be a quotative marker that marks the content of an utterance, belief etc. of the main clause subject. The use of *to* with a factive predicate can therefore only be inter-

puted as expressing an utterance of some kind by the subject. A literal interpretation of (28b) could, in other words, be rendered as “Taro was disappointed, saying ‘I lost the game.’” Changing the predicate of the matrix clause to one that is incapable of being interpreted as an act of utterance by the subject would therefore result in a deviant sentence with *to*. (32), for example, which has a first person subject and a stative predicate of emotion in the matrix clause and receives a literal present tense interpretation, is not amenable to being interpreted as the report of a previous act of utterance, and thus resists co-occurrence with *to*.

- (32)      *Watasi wa siai ni make-ta {koto ga/ \*to}*  
             1SG     TOP   game   DAT   lose-PST   COMP   NOM   QUOT  
             *kuyasi-i.*  
             be.regretful-NPST  
             ‘I am disappointed that I lost the game.’

The predicates most compatible with *to* are verbs of saying, thinking, believing, etc., as in (33), which all exhibit the behavior of plugs, as discussed in Section 2.2.2.

- (33) a.   *Taroo wa siai ni make-te kuyasi-i           to*  
             Taro   TOP   game   DAT   lose-GER   be.regretful-NPST   QUOT  
             *it-ta.*  
             say-PST  
             ‘Taro said that he was disappointed at losing the game.’
- b.   *Taroo wa siai ni make-te kuyasi-i           to*  
             Taro   TOP   game   DAT   lose-GER   be.regretful-NPST   QUOT  
             *omot-ta.*  
             think-PST  
             ‘Taro felt disappointed at losing the game.’

It is thus reasonable to assume that *to* in (28b) functions as a plug-operator even though it lacks in this example a predicate belonging to the class of verbs of saying, thinking, believing, etc. Since the speaker does not necessarily commit herself to the truth of the content of a clause embedded within a plug-operator (Section 2.2.2), it is possible for (28b) to be felicitously uttered in a context where the interlocutors do not believe its embedded content to be true.

The factive presupposition in (28a) can be regarded as induced by the factive predicate *kuyasigaru* ‘show regret,’ under the assumption that the clause constituted by *koto* denotes a specific event (Hara et al. 2013). When the embedded sentence does not refer to a specific event, as in (34), there is no factive presupposition that the game has actually been lost (see also the tenseless complement in (31a) which refers to non-specific events). Compare (32), which refers to a specific event and induces a factive presupposition, with (34), which lacks any such factive presupposition.

- (34) *Siai ni make-ru koto ga kuyasi-i* (kara  
 game DAT lose-NPST COMP NOM be.regretful-NPST (because  
*ganbar-oo*).  
 work.hard-VOL)  
 ‘(I will practice hard because) losing games is disappointing.’

There is another factive predicate in Japanese which has a similar meaning to *kuyasii* but must refer to a specific event: *zannen-da* ‘be unfortunate.’ It should follow, therefore, that the use of this predicate would be unnatural in the context of (34), which is borne out by the example in (35b). As exemplified in (35a), *zannen-da* must always carry a factive presupposition.

- (35) a. *Watasi wa siai ni make-ta koto ga zannen*  
 1SG TOP game DAT lose-PST COMP NOM unfortunate  
*da*.  
 COP.NPST  
 ‘I am disappointed that I lost the game.’
- b. ??*Siai ni make-ru koto ga zannen da*  
 game DAT lose-NPST COMP NOM unfortunate COP.NPST  
 (kara *ganbar-oo*).  
 (because work.hard-VOL)  
 ‘(I will practice hard because) losing games is unfortunate.’

The above argument gives us good grounds for conjecturing as to the source of the presupposition of what Karttunen (1973) calls full factives, such as *kuyasii*. That is, when a subject expresses an evaluative attitude toward a particular event, such as with *kuyasii* ‘regret,’ unless the relevant event has actually been experienced by the subject, it would not be possible for her to express such an evaluative attitude to begin with. The relevance of evaluation to factive presuppositions will be further discussed in Section 3.4.

One final observation can be made regarding the status of presuppositions in discourse. We saw in Section 3.1 that the context of an utterance can be regarded as the set of assumptions shared by the interlocutors. This does not, however, necessarily seem to be the case with factive predicates. Note that in the following example, speaker B can utter a sentence using a factive predicate without assuming that A knows the result of the game.<sup>5</sup>

<sup>5</sup> The sentence uttered by B in (36) would also be possible using *toyuu N*, as in the following example.  
 i) *Siai ni make-ta toyuu koto ga kuyasii*.

In the case of proper nouns, *toyuu N* must be attached when the speaker introduces someone whom the addressee is unfamiliar with (Section 3.1). But in the case of propositions, the use of *toyuu N* seems to be optional except when negating the factivity of the proposition as in (31b).

- (36) A: *Nani ga kuyasi-i no?*  
 what NOM be.regretful-NPST NMLZ  
 ‘What are you disappointed about?’
- B: *Siai ni make-ta koto ga kuyasi-i.*  
 game DAT lose-PST COMP NOM be.regretful.NPST  
 ‘I am disappointed that I lost the game.’
- A: *Soo, siai ni make-ta no.*  
 I.see game DAT lose-PST NMLZ  
 ‘I see. You lost the game, did you?’

Therefore, the propositional complement of factive predicates is not necessarily a pragmatic presupposition in the sense of Stalnaker (1974). But it can slip through hole-operators, as we saw in Section 2.2.1, and is able to be backgrounded by being asserted previously (see (15c)). This means that the relevant proposition is at least a semantic presupposition of its sentence and can be promoted to a pragmatic presupposition when absorbed in the context.

### 3.3 The backgrounding operator *no-da*

We have seen that the semantic presupposition of a sentence can be backgrounded by being asserted in the previous discourse. It is infelicitous, however, for the presuppositional content to be asserted after the sentence which carries the presupposition.<sup>6</sup> This was illustrated earlier by the contrast between (15c) and (15d), repeated here as (37a) and (37b).

- (37) a. *Taroo wa dekake-ta<sub>i</sub> Jiroo wa Taroo ga dekake-ta<sub>i</sub>*  
 Taro TOP go.out-PST Jiro TOP Taro NOM go.out-PST  
*koto o sit-tei-ru.*  
 COMP ACC come.to.know-RES-NPST  
 ‘Taro went out. Jiro knows that Taro went out.’
- b. *#Jiroo wa Taroo ga dekake-ta<sub>i</sub> koto o*  
 Jiro TOP Taro NOM go.out-PST COMP ACC  
*sit-tei-ru. Taroo wa dekake-ta<sub>i</sub>*  
 come.to.know-RES-NPST Taro TOP go.out-PST  
 ‘Jiro knows that Taro went out. Taro went out.’

<sup>6</sup> When a semantic presupposition is not shared among interlocutors, it can be asserted after the sentence which carries that presupposition by the addressee who has not recognized it as in (36). We concentrate here on the cases where the assertion and the presupposition are stated by a single speaker.



This example illustrates the tight connection that exists between semantic presuppositions and pragmatic presuppositions. Not only are the former a non-assertive part of a sentence, but they must belong to that part of the discourse that is backgrounded to a sentence.

Consider now the following example, where the order of the presupposition and the assertion is the same as (37b) but *no-da*<sup>7</sup> is appended to the second sentence.

- (38)      *Ziroo wa Taroo ga dekake-ta<sub>i</sub> koto o*  
              Jiro TOP Taro NOM go.out-PST COMP ACC  
              *sit-tei-ru.*                                *Taroo wa dekake-ta<sub>i</sub> no-da.*  
              come.to.know-RES-NPST Taro TOP go.out-PST NMLZ-COP.NPST  
              ‘Jiro knows that Taro went out. Taro went out.’

The result is a clear improvement over the infelicitous sequence in (37b), which seems to show that *no-da* functions to suppress the assertive force of the sentence, allowing its complement to take on presupposed status in the discourse.

Such an analysis of *no-da* is further supported by evidence from the order of anaphoric pronouns and their antecedents. As observed in Section 2.3, an anaphoric pronoun must be preceded by its antecedent: if the order is reversed, as in (15b), repeated here as (39a), the overall discourse becomes infelicitous.

- (39) a.    *#Soitu<sub>i</sub> wa inu o ture-tei-ta.*                                *Otoko<sub>i</sub> ga*  
              he TOP dog ACC take.along-PROG-PST man NOM  
              *hait-te ki-ta.*  
              enter-GER come-PST
- b.    *?Soitu<sub>i</sub> wa inu o ture-tei-ta.*                                *Otoko<sub>i</sub> ga hait-te*  
              he TOP dog ACC take.along-PROG-PST man NOM enter-GER  
              *ki-ta no-da.*  
              come-PST NMLZ-COP.NPST  
              ‘He had his dog along. A man came in.’

As (39b) shows, however, the attachment of *no-da* functions to improve the felicity of the discourse, although the result is not as natural as in (38). If we assume that presuppositional expressions are a kind of anaphoric expression, following the theory proposed in van der Sandt (1992) (see Section 2.3), *no-da* may be considered to have the function of explicating the context to which an anaphoric expression refers.

<sup>7</sup> *No-da* is a clause-final form which is made up of the nominalizer *no* plus the copula *da*, and which therefore inflects like the copula: *no-da* ‘non-past’, *no-dat-ta* ‘past’, *no-dat-tara* ‘conditional’, *no-desu* ‘polite’, *no-de* ‘gerund’ etc. In casual speech, *no* is frequently reduced to *n* as in *n-da*, *n-dat-ta*, *n-desu* etc. All instances of this form are referred to as *no-da* in this chapter.

The above observations raise the question of whether *no-da* always conveys in this way the presuppositional content of a discourse and, if not, what features of its meaning enable it to function in this way. As to the first question, there are examples of *no-da*-attached sentences that appear, to the contrary, to convey new information. An example of this is (40), due to Tanomura (1990), who maintains that *no-da* is frequently used to present information that the addressee could not have known.

- (40)      *Zituwa*              *watasi ni mo onazi yoona keiken*  
              to.tell.the.truth 1SG      DAT    also    same    like      experience  
              *ga ar-u n-des-u.*  
              NOM exist-NPST NMLZ-COP.POL-NPST  
              ‘To tell the truth, I have the same kind of experience.’ (Tanomura 1990: 12)

It is evident from the sentential adverb *zituwa* ‘to tell the truth’ in (40) that the proposition expressed is new information to the addressee. As shown by example (41), moreover, the information conveyed by *no-da* can be new not only to the addressee but even to the speaker. Note that (41) can be uttered naturally in a situation where the speaker has just realized how to open the door.

- (41)      *Sooka kono suitti o os-u n-da.*  
              I.see    this    switch    ACC    push-NPST    NMLZ-COP.NPST  
              ‘I get it. I’m supposed to push this switch.’ (Noda 1997: 72)

Since the speaker in this example did not know previously how to open the door, pushing the switch in question is new information for him/her.

This leads to the second question regarding the function of *no-da*. *No-da* has been given much attention in the literature and is frequently considered to provide an “explanation” for some fact (Kindaichi 1955; Alfonso 1966; Kuno 1973). Evidence for this claim can be seen in examples such as (42) and (43). In (42a), the sentence with *no-da* can be interpreted as an “explanation” for why the speaker lost in an arm wrestling match, and in (42b), for why the speaker avoids alcohol, both typical contexts in which *no-da* occurs naturally.

- (42) a. Context: The speaker has lost an arm wrestling match.  
              *Migi wa yowa-i n-da.*  
              right TOP be.weak-NPST NMLZ-COP.NPST  
              ‘I’m not good with my right arm.’  
       b. *Sake wa nom-imase-n. Isya ni*  
              liquor TOP drink-POL-NEG.NPST doctor DAT  
              *tome-rare-tei-ru n-des-u.*  
              stop-PASS-RES-NPST NMLZ-COP.POL-NPST  
              ‘I don’t drink liquor. I’ve been told by the doctor not to drink.’

On the other hand, the propositions appearing in (43) cannot be interpreted as an “explanation” for anything. (43a) simply describes a situation that the speaker has just noticed, and (43b) merely expresses an internal state of the speaker, and in neither case does the use of *no-da* feel natural. These data seem to indicate that the use of *no-da* is infelicitous in situations where the attached proposition cannot be interpreted as providing a reason for anything.

- (43) a. *Are, saihu ga na-i (#n-da).*  
 INTERJEC wallet NOM exist.NEG-NPST NMLZ-COP.NPST  
 ‘Oh no! I lost my wallet.’
- b. *Aa, tukare-ta (#n-da) naa.*  
 INTERJEC become.tired-PST NMLZ-COP.NPST SFP  
 ‘Oof! I’m tired.’

The following pair indicate, furthermore, that what is explained by a *no-da*-sentence must be a fact presupposed in the preceding discourse (cf. Kinuhata and Hara 2012).

- (44) a. Context: the speaker notices that the addressee is taking in the laundry and infers from that that it has started to rain.  
*Ame ga hut-te ki-ta {n-da/#yo}.*  
 rain NOM fall-GER come-PST {NMLZ-COP.NPST/SFP}  
 ‘It’s started to rain.’
- b. Context: the speaker notices that it has started to rain and wants to suggest to the addressee that he take in the laundry.  
*Ame ga hut-te ki-ta {yo/#n-da}.*  
 rain NOM fall-GER come-PST {SFP/NMLZ-COP.NPST}  
 ‘It’s started to rain.’

Since the inferential relation involved in (44a) and (44b) is the same, i. e. “if/when it starts to rain, the addressee takes in the laundry,” the crucial difference is whether the proposition being explained is a factual one: while the proposition that the addressee takes in the laundry is an established fact in (44a), it is merely alluded to in (44b). Since *no-da* is appropriate only in (44a), it is reasonable to assume that the sentence to which it is attached is functioning to “explain” a fact presupposed in the discourse.

The *no-da*-as-“explanation” analysis cannot be applied straightforwardly, however, to cases such as (38) where the content of the sentence attached to *no-da* corresponds exactly to the semantic presupposition of the preceding sentence. It is not the case that the speaker of (38) tries to “explain” Jiro’s knowledge by supplying the fact that Taro left. Researchers in the native school of Japanese grammar have pointed out, furthermore, many instances of *no-da* that cannot be treated as an “explanation” of anything (Okuda 1990), and attempts have been made to char-

acterize instead the relation between the sentence with *no-da* and the “explained” situation as one of the former clarifying the “background circumstances” (*haigo no zizyoo*) of the latter (Tanomura 1990) or of “establishing a connection of relevance” (*kankeizuke*) between the former and the latter (Noda 1997), etc. Although it is difficult to provide a strict definition of this relationship, I believe that a relationship of antecedent and anaphor should be included as at least one element in a full and proper account of the function played by *no-da*, something which we must however leave as a topic for future research.

What we have seen so far is that *no-da* can function to convey the semantic presupposition of another sentence. Let us consider finally whether the sentence with *no-da* attached is itself asserted: that is, does the sentence with *no-da* that conveys a presupposition also have assertive content? If it does, it should be possible for the assertive content to be bound by hole-operators. It seems, however, that there is no appropriate interpretation available to rescue (45b) and (45c) from infelicity when they follow (45a).<sup>8</sup>

- (45) a. *Ziroo wa Taroo ga dekake-ta<sub>i</sub> koto o*  
 Jiro TOP Taro NOM go.out-PST COMP ACC  
*sitte-i-ru.*  
 come.to.know-RES-NPST  
 ‘Jiro knows that Taro went out.’
- b. *#Taroo ga dekake-ta<sub>i</sub> no-dewa-na-i.*  
 Taro NOM go.out-PST NMLZ-COP-NEG-NPST  
 ‘It is not that Taro went out.’
- c. *#Taroo ga dekake-ta<sub>i</sub> no-dat-tara, Ziroo mo*  
 Taro NOM go.out-PST NMLZ-COP-COND Jiro also  
*dekake-ru daroo.*  
 go.out-NPST CONJEC  
 ‘If Taro went out, Jiro will probably go out too.’

<sup>8</sup> This does not mean that the sentence with *no-da* is never bound by hole-operators. When it expresses new information, it can be conditionalized, negated etc. as shown below.

- (i) a. *Watasi ni mo onazi yoona keiken ga ar-u no-dat-tara*  
 1SG DAT also same like experience NOM have-NPST NMLZ-COP-COND  
*anata ni ohanas-i-si-ta-i.*  
 2SG DAT HON.tell-INF-do-DESI-NPST  
 ‘If I had the same kind of experience, I would want to tell you.’
- b. *Kono suitti o os-u no-dewa-na-i.*  
 this switch ACC push-NPST NMLZ-COP-NEG-NPST  
 ‘It’s not that you push this switch.’

This suggests that the semantic contribution of *no-da* is vacuous other than to convey presuppositions, and it follows that assertion-less sentences are permitted in natural language when certain conditions are met.

### 3.4 Evaluative adverbials

Abbott (2006) classifies manner adverbials as “hard triggers” whose presuppositions are difficult to cancel compared with “soft triggers” (Abusch 2002). It is doubtful, however, whether Japanese has manner adverbials of the former kind. Consider example (46), cited from Beaver and Geurts (2011) as a sentence that presupposes the truth of the proposition that Jamie ducked behind the wall

- (46) *Jamie ducked quickly behind the wall.*

For the translational equivalent of (46) in Japanese, the event modified by the manner adverbial can easily be negated, questioned, etc., unlike what would be expected if that event were presupposed. Neither of the examples in (47), where the propositional content of (46) is embedded under hole-operators such as negation or questions, presupposes that Jamie ducked behind the wall.

- (47) a. *Zyeimii wa **subayaku** kabe ni kakure-zu-ni sonomama*  
 Jamie TOP quickly wall LOC hide-NEG-ADV as.is  
*tat-tei-ta.*  
 stand-PROG-PST  
 ‘Without ducking quickly behind the wall, Jamie remained standing as he was.’
- b. *Zyeimii wa **subayaku** kabe ni kakure-ta no?*  
 Jamie TOP quickly wall LOC hide-PST NMLZ  
*Soretomo sonomama soko ni tat-tei-ta no?*  
 or as.is there LOC stand-PROG-PST NMLZ  
 ‘Did Jamie duck quickly behind the wall? Or did he remain standing there as he was?’

This leaves open the question of whether Japanese has adverbials of any other kind where the content of what they modify is presuppositional.

Some linguists (e.g., Schreiber 1971, Bellert 1977) have noted that factive predicates such as those observed in Section 3.2 have so-called evaluative adverbial counterparts, and have argued that the event modified by such adverbials is factive. For example, the factive predicate *zannen-da* ‘be unfortunate,’ discussed earlier

in Section 3.2, has an adverbial counterpart *zannenna-kotoni* ‘unfortunately’ that appears to modify a proposition which is factual, as in (48).<sup>9</sup>

- (48)     ***Zannenna-kotoni***   *siai*   *ni*   *make-ta*.  
           unfortunate-ADV   game   DAT   lose-PST  
           ‘Unfortunately, I lost the game.’

It is difficult, however, to test the presuppositional status of the modified event in such cases using the usual tools of negation, questions, conditionals, etc, because evaluative adverbials do not occur comfortably within such operators (Sawada 1978): recall that a trigger must be in the scope of a hole-operator in order to test its presuppositional status (see Section 2.1).

- (49) a.   **??*Zannenna-kotoni***   *siai*   *ni*   *make-zu*,       *uresii-kotoni*  
           unfortunate-ADV       game   DAT   lose-NEG.ADV   happy-ADV  
           *siai*   *ni*   *make-ta*.  
           game   DAT   lose-PST  
           ‘I did not unfortunately lose the game, but I happily lost the game.’
- b.   **??*Zannenna-kotoni***   *siai*   *ni*   *make-ta*   *no?*       *Soretomo*  
           regrettable-ADV       game   DAT   lose-PST   NMLZ       or  
           *uresii-kotoni*   *siai*   *ni*   *make-ta*   *no?*  
           happy-ADV   game   DAT   lose-PST   NMLZ  
           ‘Did you regrettably lose the game? Or did you happily lose the game?’

There is, however, another way to test presuppositional status, and that is by means of the possibility of backgrounding. Backgrounding the modified event in (48) leads to redundancy, as in (50), which suggests that the proposition modified by *zannen-na kotoni* belongs not to the presuppositional, but rather to the assertive component of this sentence.

- (50)     #*Siai*   *ni*   *make-ta*.   ***Zannenna-kotoni***   *siai*   *ni*   *make-ta*.  
           game   DAT   lose-PST   unfortunate-ADV   game   DAT   lose-PST  
           ‘I lost the game. Unfortunately, I lost the game.’

<sup>9</sup> This does not mean that all evaluative adverbials require the modified event to be factual. See Kubota (2015) for adverbials that are not so constrained, as an example of which Kubota cites the adverbial *zannen-nagara* ‘unfortunately’ when used in conditionals. This might mean that *zannenna-kotoni* and *zannen-nagara*, both constructed from *zannen* ‘unfortunate,’ are different with regard to the factual status of their subsequent clause, but why that is so is a question we must leave to future research.

Other evaluative adverbials that require factual propositions behave in a similar way: While they cannot be scoped over by hole-operators, backgrounding of the proposition results in redundancy. For instance, the adverbial *odoroita-kotoni* ‘surprisingly’ differs from the verb *odoroku* ‘be surprised’ from which it is derived in its backgrounding effect with respect to factual propositions, as shown in (51).

- (51) a. *Taroo ga siai ni kat-ta. Watasi wa Taroo ga*  
 Taro NOM game DAT win-PST 1SG TOP Taro NOM  
*siai ni kat-ta koto ni odoroi-ta.*  
 game DAT win-PST COMP DAT be.surprised-PST  
 ‘Taro won the game. I was surprised that he won the game.’
- b. #*Taroo ga siai ni kat-ta. Oodoroita-kotoni, Taroo*  
 Taro NOM game DAT win-PST surprising-ADV Taro  
*ga siai ni kat-ta.*  
 NOM game DAT win-PST  
 ‘Taro won the game. Surprisingly, he won the game.’

There is, however, an adverbial that deviates from this pattern. Consider the case of *yoku* and *yokumo*, which are evaluative adverbs that impart a positive or negative evaluation, respectively, to the factual proposition that follows.

- (52) a. ***Yoku*** *koko ni ki-ta na!*  
 good.ADV here ALL come-PST SFP  
 ‘Well have you come here (I am surprised/happy that you came here).’
- b. ***Yokumo*** *koko ni ki-ta na!*  
 good.ADV.even here ALL come-PST SFP  
 ‘You have a lot of guts to come here!’ (McCready 2004: 164)

These adverbials are extensively discussed in McCready (2004), who assigns the same semantics to them (except for their evaluative character noted above), namely, a factual (“actual” in McCready’s terminology) status to the modified proposition and the speaker’s surprise at the proposition. She further observes that they cannot be scoped over by modals, conditional antecedents, negation, etc. Despite such resemblances, they differ from each other in the possibility of backgrounding the proposition they modify.

- (53) a. *Taroo wa kono ronbun o yon-da. (Sikasi) yoku*  
 Taro TOP this paper ACC read-PST but good.ADV  
*kono ronbun ga yom-e-ta na.*  
 this paper NOM read-POT-PST SFP  
 ‘Taro read this paper. I’m impressed that he could read it.’

- b. #*Ore no ronbun o sute-ta. Yokumo ore*  
 1SG GEN paper ACC throw.away-PST good.ADV.even 1SG  
*no ronbun o sute-ta na.*  
 GEN paper ACC throw.away-PST SFP  
 ‘You threw away my paper. How dare you throw my paper away!’

While it is not redundant to repeat the content of the preceding utterance with *yoku* in (53a), repetition of the same sentence in (53b) is unnatural, making it sound as if the speaker is criticizing the addressee by uttering the same sentence over and over. If this intuition is correct, *yokumo* behaves in the same way as the evaluative adverbials considered earlier: it modifies the assertive content. On the other hand, (53a) provides evidence that the assertion of the sentence with *yoku* is not the modified proposition itself. Rather, I conjecture that the assertion of the *yoku*-sentence in (53a) is the speaker’s evaluation of the agent’s ability to read the paper, the reading event itself being a presupposition of the sentence.<sup>10</sup> This analysis of sentence (53a) can be summed up as in (54).

- (54) Assertion: The speaker evaluates positively the ability of the addressee to read the paper.  
 Presupposition: The addressee read the paper.

Another adverbial which may be seen to modify presuppositional content rather than an assertion is *sekkaku* ‘with special effort, go to the trouble of.’ *Sekkaku* is notorious for its complicated meaning and uses (Watanabe 2001, McCready 2007, McCready and Sudo 2012), but essentially it modifies a proposition that is a precondition for some action expected to be performed as a consequence. For example, in (55a), having bought alcohol is a precondition for drinking: the precondition is expressed in the reason clause and the action in the consequent. In (55b), the precondition for making a meal is stated in the concessive clause and the action expected to follow from that as a consequence is the eating of the meal, which is denied in the consequent clause.

<sup>10</sup> It is not always the ability of the subject that is targeted for evaluation with *yoku*, as can be seen from the following example.

- (i) *Ame ga hut-tei-ru. Sikasi yoku ame ga hut-ta na.*  
 rain NOM fall-PROG-NPST but good.ADV rain NOM fall-PST SFP  
 ‘It’s raining. But I’m surprised that it rained.’

My conjecture is that in this use of *yoku* what is targeted for evaluation are the circumstances that have made it possible to rain, but I must leave it to future research to reconcile this account with the account given above for (53a).



- (55) a. **Sekkaku**                *osake*    *kat-tear-u*        *kara*        *nom-oo*    *yo.*  
              with.special.effort   alcohol   buy-RES-NPST   because   drink-VOL   SFP  
              ‘We’re lucky enough to have bought some alcohol, so let’s drink.’
- b. **Sekkaku**                *gohan*    *o*        *tukut-ta*        *noni*    *tabe-te*  
              with.special.effort   food        ACC   make-PST   CONC   eat-GER  
              *kure-na-katta.*  
              give.me-NEG-PST  
              ‘Even though I went to the trouble of making a meal, he didn’t eat any-  
              thing.’ McCready (2007: 416, 420)

In both examples in (55), the precondition is stated explicitly and *sekkaku* modifies it. But it is ungrammatical to use *sekkaku* with the modified proposition alone as in (56): *sekkaku p* must be embedded under subordinators such as *kara* and *noni* as in (55) and always implicates the desirability of some action to be performed as a consequence.

- (56)        \***Sekkaku**                *gohan*    *o*        *tukut-ta.*  
              with.special.effort   meal        ACC   make-PST  
              ‘I went to the trouble of making a meal.’

What is relevant to our purposes about the meaning of *sekkaku* is McCready and Sudo’s (2012) claim that the proposition modified by *sekkaku* is not just a precondition for taking an action but a presupposition in the discourse. As evidence for their claim, they point out that *sekkaku* is not licensed in conditional clauses, as seen in (57a). The acceptability of (57a) is improved, however, by adding to the antecedent clause the backgrounding operator *no-da*, as in (57b), in which case the proposition in the antecedent clause is interpreted as factual and taken for granted among the discourse participants.<sup>11</sup> (The examples in (57) are adapted from McCready and Sudo 2012.)

- (57) a. \***Sekkaku**                *osake*    *kat-teat-tara*        *nom-oo*    *yo.*  
              with.special.effort   alcohol   buy-RES-COND   drink-VOL   SFP  
              ‘If we’re lucky to have some alcohol bought, let’s drink.’

<sup>11</sup> A reviewer pointed out that using *(no)nara* also improves the acceptability of (57a) as shown below.

- (i) **Sekkaku**                *osake*    *kat-tear-u*        *(no)-nara*        *nom-oo*    *yo.*  
              with.special.effort   alcohol   buy-RES-NPST   (NMLZ)-COND   drink-VOL   SFP  
              ‘If it’s the case that some alcohol has been bought, let’s drink.’

Note that even in this case the interpretation which makes the sentence felicitous is that the speaker accepts the proposition that some alcohol has been bought as true, and not the interpretation under which the antecedent is hypothetical.

- b. **Sekkaku**                      *osake*    *kat-tear-u*                      **n-dat-tara**  
 with.special.effort    alcohol    buy-RES-NPST    NMLZ-COP-COND  
*nom-oo*    *yo.*  
 drink-VOL    SFP  
 ‘If it’s the case that some alcohol has specially been bought, let’s drink.’

Though McCready and Sudo (2012) do not consider evidence from backgrounding, the fact that backgrounding results in no redundancy with *sekkaku*, as in (58), is consistent with their claim.

- (58)    *Osake*    *ga*    *ar-u*                      *yo.*    **Sekkaku**                      *osake*    *ga*  
 alcohol    NOM    exist-NPST    SFP    with.special.effort    alcohol    NOM  
*ar-u*                      *kara*                      *nom-oo*    *yo.*  
 exist-NPST    because    drink-VOL    SFP  
 ‘We have some alcohol. Because we have it (as a special opportunity), let’s drink.’

This provides confirmation that the proposition modified by *sekkaku* is a semantic presupposition of the sentence.

But is the proposition here also a pragmatic presupposition? Although McCready and Sudo (2012) give an affirmative answer to this question, it seems unlikely that speaker B in the following discourse assumes that the addressee has knowledge of the proposition appearing in the *sekkaku* clause.

- (59) A: *Doosite*    *osake*    *o*    *nom-ita-i*                      *no?*  
 why    alcohol    ACC    drink-DESI-NPST    NMLZ  
 ‘Why do you want to drink sake?’
- B: **Sekkaku**                      *Yamada-san*    *ga*                      *motteki-te*    *kure-ta*  
 with.special.effort    Yamada-Mr    NOM    bring-GER    give.me-PST  
*kara.*  
 because  
 ‘Because Mr. Yamada specially brought it for us.’
- A: *Soo,*    *Yamada-san*    *ga*                      *kure-ta*                      *no.*  
 I.see    Yamada-Mr    NOM    give.me-PST    NMLZ  
 ‘I see, Mr Yamada gave it to us.’
- B: *Un,*    *kyoo*    *no*    *asa*                      *kure-ta*                      *yo.*  
 yes    today    GEN    morning    give.me-PST    SFP  
 ‘Yes, he gave it to us this morning.’

Thus, the proposition which *sekkaku* modifies is not necessarily presupposed in the context. As regards *yoku*, on the other hand, as argued by McCready (2004), it is infelicitous to answer a question using a sentence with *yoku*, suggesting that the proposition modified by *yoku* is pragmatically presupposed. As further confirmation of this, consider the following conversational exchange.

(60) Context: upon B entering A's room, A opens the conversation as follows.

- A: ??**Yoku**    *Taroo wa konna muzukasi-i ronbun o yon-da*  
           good.ADV Taro TOP such be.difficult-NPST paper ACC read-PST  
           *yo.*  
           SFP  
           'I'm surprised that Taro read such a difficult paper.'
- B: *E, kono ronbun o yon-da no?*  
      INTERJEC this paper ACC read-PST NMLZ  
      'What, he read this paper?'

While not entirely impossible, it is extremely unnatural to use a *yoku*-sentence out of the blue as in (60). The discourse congruity here is much improved by informing the addressee of the fact that Taro read the paper in question before offering an evaluation with *yoku*. This suggests that, for *yoku* to be used appropriately, the semantic presupposition it carries must also be shared by one's interlocutors and that *yoku* is therefore both a semantic and a pragmatic presupposition trigger, unlike *sekkaku*.

### 3.5 Summary

In this section, we have considered four expressions in Japanese that exhibit presuppositional behavior. The characteristics of each of these can be summarized as follows.

- Proper nouns can be used with or without *toyuu N*. When used without *toyuu N*, the existence of the referent of the proper noun must be pragmatically presupposed.
- The complementizers *koto* and *to* can be used with so-called factive predicates. While the former triggers a semantic presupposition when used with such a predicate, the latter does not necessarily do so, functioning instead like a plug.
- In one of the uses of *no-da*, the content of the sentence to which it is attached functions as a semantic presupposition, in which case the sentence with *no-da* has no assertive content.
- While manner and evaluative adverbials do not in general presuppose the truth of the proposition they modify, the adverbials *yoku* and *sekkaku* have an exceptionally complex semantic character where the content of the modified proposition is presupposed.

The presupposition triggers discussed in this section can be characterized with respect to the semantic/pragmatic distinction as in Table 1.

**Table 1:** Presuppositional triggers and their semantic/pragmatic status

| Presuppositional status | bare proper noun | <i>koto</i> +factive | <i>yoku</i> | <i>sekkaku</i> |
|-------------------------|------------------|----------------------|-------------|----------------|
| Semantic                | ✓                | ✓                    | ✓           | ✓              |
| Pragmatic               | ✓                |                      | ✓           |                |

## 4 Conclusion

This chapter has presented a brief overview of the phenomenon of linguistic presupposition as it has been treated in the linguistic literature and has discussed some Japanese constructions which may be considered to encode presuppositional meaning in different ways from English, our findings on which are summarized in Section 3.5.

Presuppositions are ubiquitous. Discourse participants share innumerable assumptions in common, which sometimes become encoded in particular linguistic forms and constructions that trigger those assumptions as presuppositions. Given the widespread occurrence of presuppositions, it is not surprising that new research is bringing more and more to light the existence of presuppositions in places not previously recognized, and it stands to reason that the number and kinds of presuppositional phenomena brought to light by such research will only expand further as the target of investigation is extended to languages other than English. Though the range of particular phenomena we have dealt with in this chapter is restricted, we hope that the observations and analyses we have presented here of presuppositional phenomena in a language other than English represent a first step toward a more accurate understanding of how and in what ways presuppositions can be manifested in language-specific and typologically-specific ways.

## Acknowledgments

An earlier version of this chapter grew out of discussions with Tadashi Eguchi, and underwent major revision on the basis of comments received from an anonymous reviewer, to whom I express my thanks. I also thank Stephen Howe and Elin McCready for commenting on the earlier and current versions of this chapter, respectively. In the final stage, I greatly benefited from comments from the two editors of this volume, without whose support this chapter would be much less readable than it is.

## Additional abbreviations

NPST – nonpast, POT – potential

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# 14 Sentence-final particles in Japanese

## 1 Overview

It has long been recognized in the traditional Japanese grammatical literature that the various suffixes found within the highly agglutinative verb and the various particles found to its right are ordered semantically, with more “objective” items found closer to the verbal root, and more “subjective” elements appearing farther away, to the right (see Larm 2009 and Narrog 2009 for discussion in English). This split between *objective* and *subjective* regions was made at least as early as Kindaichi (1953). This view has informed subsequent work that makes finer grained distinctions, such as that of Hayashi (1960), who sorts the right periphery into items related to *description*, *evaluation*, *presentation*, and *transmission*. This and related work appears almost exclusively in Japanese, but see Larm (2009) and Narrog (2009) for explication and development of this idea in English. The chart in Figure 1 (from Davis 2011, based in turn on one found in Minami 1993), summarizes the picture of the right periphery outlined by Kindaichi and Hayashi. Note that the elements here are only a small sample of the suffixes and particles that can appear in the right periphery.

|             |  |            |  |              |  |              |  |           |  |                           |  |                         |  |                         |  |                                          |  |                            |  |  |  |  |  |                              |  |                              |  |                                  |  |  |  |  |  |  |  |
|-------------|--|------------|--|--------------|--|--------------|--|-----------|--|---------------------------|--|-------------------------|--|-------------------------|--|------------------------------------------|--|----------------------------|--|--|--|--|--|------------------------------|--|------------------------------|--|----------------------------------|--|--|--|--|--|--|--|
| Description |  | Evaluation |  | Presentation |  | Transmission |  | Verb Root |  | Causative ( <i>sase</i> ) |  | Passive ( <i>rare</i> ) |  | Negation ( <i>nai</i> ) |  | Past ( <i>ta</i> ), Copula ( <i>da</i> ) |  | Epistemic ( <i>daroo</i> ) |  |  |  |  |  | SFP <sub>1</sub> : <i>ka</i> |  | SFP <sub>2</sub> : <i>yo</i> |  | SFP <sub>3</sub> : <i>ne, na</i> |  |  |  |  |  |  |  |
|             |  |            |  |              |  |              |  |           |  |                           |  |                         |  |                         |  |                                          |  |                            |  |  |  |  |  |                              |  |                              |  |                                  |  |  |  |  |  |  |  |
|             |  |            |  |              |  |              |  |           |  |                           |  |                         |  |                         |  |                                          |  |                            |  |  |  |  |  |                              |  |                              |  |                                  |  |  |  |  |  |  |  |
| Objective   |  |            |  |              |  |              |  |           |  | Subjective                |  |                         |  |                         |  |                                          |  |                            |  |  |  |  |  |                              |  |                              |  |                                  |  |  |  |  |  |  |  |

Figure 1: Sketch of the Japanese right periphery, based on a figure from Minami (1993: 52)

The rightmost edge of Figure 1 contains the three sentence final particles (SFPs) that have received the largest amount of attention in the English-language literature: *ka*, *yo*, and *ne*. These all fall into Kindaichi’s “subjective” meaning category, a category which also contains certain modal/evidential elements, such as the particle *daroo*, which has received a formal semantic analysis in Hara (2006). Hayashi’s classification, on the other hand, splits the three SFPs into two groups, with *ka* appearing in



the “presentation” region, and the others appearing in the “transmission” region. This split is one that we adopt in the following discussion. As we show in subsequent sections, the question particle *ka* is very different, both syntactically and semantically, from the other particles. It can roughly be thought of as a “clause-typing” particle, marking the clause it attaches to as an interrogative, but as we discuss in Section 2, there is reason to think that this use of *ka* may be connected to the use of *ka* in the formation of disjunctions and indefinites, putting the semantics of this particle squarely in the realm of “ordinary” semantic meaning.

Those particles constituting Hayashi’s “transmission” group, on the other hand, seem to be more fundamentally pragmatic in nature. The word “transmission” itself suggests a semantic/pragmatic role for these particles that will drive the discussion throughout this chapter: these particles are means by which speakers situate their utterances in discourse; they take informational content and make some indication about how that content is to be “transmitted” to the addressee.

For expository purposes, we will distinguish the transmission particles into two groups, which for convenience we call “notification” particles (exemplified by *yo*) and “confirmation” particles (exemplified by *ne/na*). These terms are inspired by terminology found in the Japanese literature (e. g. the label *shirase* “notification” particles found in Masuoka and Takubo 1989). While evocative, the terms themselves are merely a convenience, and as will be seen, the exact semantic and pragmatic functions of these particles, and the systematic differences between the two groups, is difficult to pin down.

The notification particles include *yo*, *zo*, and (Eastern Japanese) *wa*.<sup>1</sup> All these particles show similarities to one another, justifying their classification into a coherent group, but they also show subtle semantic distinctions; following the literature, we will focus on *yo*, limiting the other particles to a brief overview.<sup>2</sup> This discussion can be found in Section 3.

The speaker-oriented particles are often set up in opposition to the confirmation particles *ne* and *na*. These particles have not received as much attention in the formal literature as the notification particles (in particular *yo*) have. In Section 4 we will provide an overview of some facts about them and a partial summary of existing informal linguistic analyses. The three groups of particles outlined above can also appear in combination with one another. These combinations are discussed in Section 5.

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<sup>1</sup> The discussion here, and in most of the literature, is focused on Eastern Japanese, particularly the dialect region centered around Tokyo. Other varieties of Japanese and the related Ryukyuan languages exhibit a range of other particles as well. These particles have received scant attention, but see Hara and Kinuhata (2012) for a formal analysis of the Osaka particle *nen*. In what follows, we restrict our attention to particles associated with the standard variety centered around Tokyo.

<sup>2</sup> Although Masuoka and Takubo also class the particle *ze* as a *shirase* particle, we will not discuss it here.

Section 6 concludes, discussing what we take to be some of the broader implications for semantic and pragmatic theory of the particles discussed in this chapter.

## 2 Question particle *ka*

The first SFP we discuss is *ka*, typically labeled a question (or Q) particle. Intuitively, the Q particle can be thought of as a way of marking the clause it attaches to as an interrogative, and hence might be thought of as a kind of clause-typing particle. The following representative examples of its use in a matrix polar and *wh* interrogative question are cited in Slade (2011) (transcription and gloss of this and subsequent cited examples have been modified to fit the conventions adopted in this volume).

- (1) Embedded Interrogatives
- a. *Gakkoo ni ik-imas-u ka?*  
 school GOAL go-POL-NPST Q  
 ‘(Are you) going to school?’ (Yoshida and Yoshida 1996)
- b. *John ga nani o ka-imasi-ta ka?*  
 John NOM what ACC buy-POL-PST Q  
 ‘What did John buy?’ (Hagstrom 1998: 15)

Unlike *yo*, *ne*, and the other SFPs discussed in this chapter, *ka* can be embedded in non-quotative contexts. In fact, embedded interrogatives *require* marking with *ka*, unlike matrix interrogatives, where *ka* can be dropped (see Yoshida and Yoshida 1996 for discussion of “question particle drop”) or in which a number of other particles (for example, the particle *no*) can be used instead (see Miyagawa 1987 and Yanagida 1995 for some discussion of the choice between *ka* and *no*). The mandatory use of *ka* in embedded interrogatives is illustrated in the following examples.<sup>3</sup>

- (2) Matrix Interrogatives
- a. *Gakkoo ni ik-u \*(ka) wakar-ana-i.*  
 school GOAL go-NPST Q know-NEG-NPST  
 ‘I don’t know if I’m going to school.’
- b. *John ga nani o kat-ta \*(ka) wakar-u ka?*  
 John NOM what ACC buy-PST Q know-NPST Q  
 ‘Do you know what John bought?’

<sup>3</sup> In embedded polar interrogatives, the polar question particle *kadooka* is often used instead of *ka*. This particle cannot, however, be used in matrix interrogatives, and we will ignore it here. Note also that matrix interrogatives can host polite verbal morphology, whereas embedded interrogatives typically do not.

The embeddability of *ka* stands in contrast to the other SFPs, which cannot be embedded except in quotative environments.

Historically, it is interesting to note that *ka* derives from a class of sentence-internal particles in Old Japanese called *kakarizyosi* (“attaching particles”), which triggered particular verbal morphology on the final verb of the clause where the particle takes scope, a phenomenon traditionally called *kakarimusubi* (“binding with the *kakari* particle”). This pattern is illustrated by the following example, cited in Hagstrom (1998), where the *wh*-word, Q particle, and attributive verbal morphology (glossed M for *musubi*, the traditional term) appear in bold.

- (3) *Sisi husu to tare ka kono koto oomae ni maos-u.*  
 beast lie QUOT who Q this thing Emperor DAT say-M  
 ‘Who reported to the Emperor that beasts were lying down?’  
 (*Nihon Shoki* [720]: 75, Ogawa 1977: 221)

This pattern was lost in modern Japanese, with *ka* moving to a sentence-peripheral position and, in effect, becoming an SFP. Hagstrom (1998) argues for a synchronic analysis of Modern Japanese *ka* in which it moves to its surface sentence-final position from an underlying sentence-internal position corresponding broadly to the *kakarizyosi* position it occupies in Old Japanese. He provides cross-linguistic support for this analysis from Sinhala and Okinawan.

Semantically, Hagstrom argues that *ka* acts as an existential quantifier over choice function variables. The choice function variable that *ka* existentially quantifies over is provided by the trace left by movement of *ka*. The choice function variable operates on a set of Hamblin (1958) alternatives. These alternatives are generated by a *wh*-phrase (or indeterminate, in the terms of Kuroda 1965) in the scope of the trace of *ka*. This analysis is motivated in part by the fact that while sentence-final *ka* combines with sentence-internal *wh*-phrases to form interrogatives, it can attach locally to *wh*-phrases to form indefinites. This gives rise to minimal pairs like the following:

- (4) *Dare ga tabe-ta ka.*  
 who NOM eat-PST Q  
 ‘Who ate?’
- (5) *Dare-ka ga tabe-ta.*  
 who-Q NOM eat-PST  
 ‘Someone ate.’

Hagstrom cites Kuroda (1965) for the view that the *ka* found in indefinites and the *ka* found in *wh* interrogatives are the same morpheme. Hagstrom develops a unified theory, where a single semantics of *ka* gives rise to the two interpretations depending on the location of the particle.

This analysis unifies the treatment of Q particles in the formation of indefinites and interrogatives containing a *wh*-phrase/indeterminate (see also Szabolcsi 2015). Recent work by Cable (2007, 2008, 2010) on Q particles in Tlingit builds on this basic view. Whereas Hagstrom makes *ka* an existential quantifier over the choice function variable provided by its own trace, Cable adopts an analysis in which Q particles are themselves choice function variables, a view also argued for by Yatsushiro (2001, 2009). Cable argues further for a tight connection between Q particles and Focus, building on the ideas of Beck (2006), by suggesting that *wh*-phrases have only a focus-semantic value (Rooth 1992, 1985), and that Q particles are uniquely positioned to bring these defective meanings back to acceptability by operating exclusively on the focus-semantic value of their complements and returning a legitimate regular semantic value. At a syntactic level, Cable proposes a typology of languages determined in part by whether Q projects a phrase or whether it attaches as an adjunct. In the latter case we get movement of the particle itself to a peripheral position, per Hagstrom's analysis of Japanese.

The proposals sketched above are able to unify the semantics of *ka* in the formation of indefinites and *wh*-interrogatives, but remain silent about the role it plays in polar interrogatives, in which there is no *wh*-phrase/indeterminate to provide the Hamblin alternatives upon which *ka* can operate. Cable (2007, 2010) argues that polar and *wh*-interrogatives do not involve the same Q particle semantically, and that Japanese *ka* in these constructions is a case of accidental homophony. Slade (2011), however, notes that such homophony is cross-linguistically common, making a unified approach more attractive than one that relegates the similarity to one of accidental homophony. Slade further argues that a unified account should take account of the fact that *ka* is also used as a disjunctive particle, as seen in the following example:

- (6) *John-ka Bill-ka ga hon o kat-ta.*  
 John-Q Bill-Q NOM book ACC buy-PST  
 'John or Bill bought a book.'  
(Kuroda 1965: 85)

The cross-linguistic tendency for the same particle to be used as an interrogative Q particle and as a disjunctive particle is noted by Jayaseelan (2001, 2008), who focuses on the phenomenon in Malayalam. As Slade stresses, a unified analysis of Q particles would seek to treat all of the above uses (*wh*-interrogatives, polar interrogatives, indefinites, and disjunction) as deriving from a single underlying semantics of *ka*. Slade notes that neither Hagstrom nor Cable provide such a unification, and do not account for the particle's use in polar and alternative questions. Slade pursues such a unification for Q particles in Sinhala, extending his analysis to Japanese *ka*. His analysis maintains the core insight from these earlier studies that the use of *ka* involves choice function over alternatives, the conclusion being that all of these constructions involve Hamblin alternatives in one way or another.

The conclusion we draw from this overview of current work is that the sentence-final question particle use of *ka* is of a kind with the other, sentence-internal uses of the particle, and does not directly encode semantic content relating to speech acts. It is, in other words, implicated in deriving the “regular” semantic content of the sentence in which it occurs. As we show in the next sections, this distinguishes *ka* at a fundamental level from the other SFPs, whose contribution seems to be more fundamentally pragmatic.

### 3 Notification particles

The informal literature on *yo* is extensive, but our aim here is to focus on formal analyses of Japanese particles, so we will not attempt to give a proper overview of this literature here (a task which would in any case be impossible in a chapter of this length). In this section we will examine the data that motivated the first explicitly formal work on *yo* in theoretical linguistics and then turn to the analyses it motivated.<sup>4</sup> This data centers around forcefulness: pretheoretically, it seems that *yo* signals a desire on the part of the speaker for the hearer to accept the content in the scope of *yo*. This in itself does not distinguish *yo*-marked sentences from ordinary ones in any way: plainly any utterance of a declarative or imperative sentence (at least when used in the standard ways to perform an assertion or command) is aimed at acceptance of this content by the hearer. The difference is that *yo* makes this desire fully explicit. Let us see what this observation amounts to. Data are drawn mainly from McCready (2005, 2006, 2008a, 2009), but we will also make reference to the informal literature where it is immediately relevant.

The basic intuition is illustrated by (7), where adding *yo* seems to provide emphasis, or adds a sense of urgency to the utterance. We take the English particle *man* to be a reasonably close analogue of *yo* (cf. McCready 2008b), and use it in our translations as a rough equivalent, though there are important differences between the two particles. In particular, English *man* is only found in certain dialects and registers of English, while *yo* is used by a wide range of speakers and is thus less socio-linguistically marked and probably more widely used than English *man*.

- (7) *Taroo ga ki-ta (yo).*  
       Taro   NOM come-PST SFP  
       ‘Taro came (, man).’

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<sup>4</sup> Some formal modeling of the particles was done from a computational perspective by Ono et al. (1993), but the aim there was less to provide an account capable of deriving their distribution and character than to give a simple model of their general role.

The particle produces a sense of insistence in imperatives as well. The particle-less version below is simply a request; adding the particle gives the impression that the speaker has some stake in the hearer choosing to follow the request, and so sounds non-neutral.

- (8)        *Dizuniirando ni it-te (yo).*  
           Disneyland GOAL go-GER SFP  
           ‘(Come on,) Go to Disneyland(, man).’

The basic function of the particle in these cases is, intuitively, to strengthen what is said, or to (try to) insist on uptake of the utterance content. This function comes out very clearly when the truth of an assertion is questioned. One response to such challenges is to insist on the truth of the claim; in such contexts, not using *yo* sounds rather unnatural. If the speaker doesn’t really care, of course, the particle isn’t necessary.<sup>5</sup> Here is an example. In this discourse, *yo* is natural in A’s second utterance, where A is explicitly denying B’s denial of A’s first utterance. The reason is that A has good reason to suppose that B will not be willing to accept what he says, and so has good reason to try to strengthen the expression of this content.

- (9) a. A: *Sakki Zyon ga kaet-ta.*  
           just.now John NOM go.home-PST  
           ‘John just went home.’  
       b. B: *Uso!*  
           lie  
           ‘No way!’  
       c. A: *Kaet-ta # (yo).*  
           go.home-PST SFP  
           ‘He DID go home!’

English is similar when intonation is kept flat and inexpressive, in the absence of the particle *man*, which seems to correspond in some respects to *yo*.

- (10) a. A: *John is coming tonight.*  
           B: *No way.*  
           A: *# He’s coming.*  
           A: *He’s coming, man.*

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<sup>5</sup> This observation can be linked with the question of the sort of content presented by particles, which is usually taken to be presuppositional or expressive. In either case, though the content is not truth-conditional, it is still able to participate in the generation of implicatures. See Davis (2011) for discussion.

For the present, the connection between intonation and particle meaning should be recalled as it will become important as we proceed.<sup>6</sup>

McCready's work analyzed *yo* as very explicitly forcing content on the hearer. The analysis was made in a dynamic setting. Here, the meaning of a sentence is the capacity it has to change the information state of an interpreter. When a hearer processes a new sentence, she is given the option to add the information contained in that sentence to her current stock of information; if she accepts the proposal, the information is so added, and the common ground of the discourse changes accordingly. The change in information thus produced is, roughly, the meaning of the sentence. In such cases of 'discourse update,' two cases can be distinguished. In the first, the information in the sentence is compatible with the information the interpreter already has. Then the new information is simply added to the information state by a process of *update*. The other possibility is that the new information is not compatible with what is already known, the current content of the information state. In such a case, update results in inconsistency, giving rise to a failed discourse move.

Plainly discourses of this sort do not actually fail; this is a theoretical artifact. The hearer instead modifies her stock of beliefs in such a way that the new information can be accepted, assuming that she is willing to accommodate it. One way to model this process of accommodation is via the so-called 'AGM' theory of belief revision (e. g. Gärdenfors 1988).<sup>7</sup> In this theory, a 'downdate' operator can be defined, the opposite of update. Downdate is an operation that removes content from an information state rather than adding it; in particular downdating with some proposition yields a minimal revision of an information state where that proposition is no longer entailed. Now, supposing that a particular proposition *q* conflicts with the proposition *p* with which we would like to update, it becomes possible to downdate with *q* and then update with *p*; this is an operation of belief revision. McCready's idea was to take *yo* to denote a request for revision as a matter of lexical meaning. Thus an utterance of *yo(p)* asks the hearer to revise with *p*. The proposition *q* which is then 'removed' can be either the negation of *p* or some other inconsistent proposition, as determined by contextual factors.

One could also incorporate a presupposition to account for the observation made in many places in the literature (e. g. Takubo and Kinsui 1997; Suzuki Kose 1997; Noda 2002) that the content in *yo*'s scope must be new to the hearer.<sup>8</sup> However, one might question whether this is really necessary, for, if (as one might expect) the use of *yo*

<sup>6</sup> We have the impression that there is in general a close relationship between particle meanings and the pragmatic functions of intonation; there may be a division of labor between these two sets of linguistic phenomena. This is a connection that deserves a more systematic investigation than it has so far received in the literature.

<sup>7</sup> The AGM theory is selected only for concreteness. There are many other options on the market. A nice overview can be found in Delgrande et al. (2008).

<sup>8</sup> This move is made by e. g. McCready (2005).

indicates the speaker's assessment that revision might be required, then it follows that the speaker believes that the hearer (at a bare minimum) does not already believe that information. On this picture, then, the requirement for hearer-newness becomes a kind of Relevance implicature.

This analysis accounts for restrictions noted in the literature on the use of *yo*. Suzuki Kose (1997) notes that in contexts where the speaker has absolute authority over the hearer, use of *yo* is infelicitous. For example, in the context of an army officer ordering his troops, (11a) is good, but the corresponding version with *yo*, (11b), is bad. Kose believes that *yo* emphasizes the personal desires of the speaker; as a result, she claims (11b) is bad because it is inappropriate for an officer to emphasize personal desires when giving orders to his subordinates. The present analysis leads to a different way of thinking about the facts in (11): for *yo* to be used, one assumes that there is a reason, as with any lexical item (or indeed action). What the particle does is to ensure, or attempt to ensure, that the hearer accepts the content in its scope. But in the case of the army officer, there is no reason to doubt that the hearer will accept this content: given that the troops are subordinate to the officer, they are required to accept his orders. As a result, use of the particle is marked.

- (11) a. *Susum-e!*  
advance-IMP  
'Advance!'
- b. # *Susum-e yo.*  
advance-IMP SFP  
'Advance, man!'

Davis (2009) shows that *yo* does not always carry the impression of force discussed in the last section (see also Oshima 2011 for discussion of this issue). Two significant advances are made in his approach: first, a separation of the particle content and the contribution of the intonational contour of the sentence in which the particle appears, and, second, the introduction of the notion of choice of action into the analysis. Davis's key observation (based on Koyama 1997) is that the intonational contour with which *yo* appears is crucial to its interpretation. The use of *yo* discussed in the previous section is associated with falling intonation. But *yo* with rising intonation has a very different character.

Here are two examples, simplified from some appearing in Davis's paper, indicating the contribution of *yo* with rising intonation.

- (12) Context: in the sushi place
- A. *Dono susi ni si-yoo kana?*  
which sushi DAT do-VOL SFP  
'Which sushi should I get?'



- B. *Koko no maguro wa uma-i* #(*yo*↑)  
 here GEN tuna TOP be.good-NPST (SFP)  
 ‘The tuna here is good, *yo*.’

(13) Context: in front of a stopped car.

- A. *Gasorin ga nakunar-imasi-ta.*  
 gasoline NOM become.out.of-POL-PST  
 ‘I’m out of gas.’
- B. *Magat-ta tokoro ni gasorinsutando ga ar-imas-u*  
 turn-PST place LOC gas.station NOM exist-POL-NPST  
 #(*yo*↑)  
 (SFP)  
 ‘There’s a gas station up there around the corner, *yo*.’

In both of these examples, roughly, B is giving advice to A about what he should do to solve some problem he is facing. In the sushi case, B knows a good sushi option for A to pick; in the gas case, B knows where A should go to get gas. These discourses are not that natural without *yo*, but perfectly natural with it. Davis takes this to mean that *yo* with rising intonation is a marker of (Gricean) relevance: use of the particle indicates that the information conveyed by the sentence is relevant for the speaker, more or less in the sense used by van Rooij (2003a, b).

Davis’s starting point is the idea that one should separate the contributions of intonation and *yo* itself. To do this, he adopts (a version of) the theory of Gunlogson (2003). Gunlogson gives a model of discourse context which represents the public commitments of each conversational participant, those propositions that each participant is known to believe; the commitments of agent *a* are represented as  $PB_a$ . The common ground is then defined as the set of those propositions that are public commitments of all conversational participants: limiting attention to speaker *s* and hearer *h*,  $CG = PB_s \cap PB_h$ . In standard dynamic semantics it is often an implicit assumption that the hearer’s belief set is being updated, but with Gunlogson’s machinery, it is possible to update the commitments of speaker and hearer separately in an explicit manner. Davis (2009) makes use of this potentiality by assuming that (by default, i. e. without other operators in play) assertions target only the speaker’s public beliefs. He achieves this by defining an assertion operator which serves to update the public beliefs of the speaker.<sup>9</sup>

<sup>9</sup> This model is modified significantly in Davis (2011), where the public beliefs targeted for revision are left open by the assertion operator itself, with the use of *yo* making the utterance target both the speaker’s and hearer’s public beliefs. In that work, the final fall in conjunction with *yo* encodes something like a downdate operation, while a final rise with *yo* indicates relevance for a contextually salient decision problem.

Such a semantics of assertion lacks any provision for updating the belief set of the hearer, which is presumably the usual goal of actual assertions. Davis suggests that this function of assertion is encoded by intonation. Intonational contours introduce additional operators, which also appear in the syntax and serve as modifiers of ‘force heads,’ including the assertion operator. In assertions, sentence final falling intonation modifies the semantics of the assertion operator so that it targets the hearer’s (public) beliefs for update in addition to those of the speaker.

Davis treats *yo* as having two components to its meaning: a presuppositional component and an ‘asserted’ component. The presuppositional component is defined relative to a sort of decision problem. In Davis’s account, the context determines a set of possible actions from which the contextual agents can select, which defines the contextual decision problem. The presupposition allows use of *yo* only in contexts where the propositional content *p* of the host sentence determines an optimal action (which turns out to be too strong a requirement, as we will show shortly): the presupposition requires that ‘all worlds in which the addressee chooses action *a* are at least as good in terms of the contextual ordering source as ones in which he does not’ (Davis 2009). The at-issue content of *yo* is just an identity function.

Let’s see how this applies to a concrete example. Consider again the sentence in (12). Suppose that A is trying to decide whether to order salmon or tuna. Here there are basically four possibilities: only the tuna is good, only the salmon is good, both are good, or neither are. Let’s suppose further that B is minimally competent in restaurant selection and the fourth option is off the table. The remaining three possibilities can be denoted *T*, *S*, *B*. We indicate A’s choice with a subscript; thus, for example *T<sub>s</sub>* represents those (unfortunate) situations where only the tuna is good (*T*) and A chooses salmon (*s*). Then there are six possibilities according to A (who lacks knowledge about this restaurant), ranked as follows by the partial ordering on worlds (assuming that it is preferable to pick something tasty than something not).

$$(14) \quad \{T_s, S_p\} <_\sigma \{T_p, S_s, B_p, B_s\}$$

Here note that there is no determinate best option; choosing tuna might place A in a preferable world, or in a less preferable one. The same goes for salmon. A thus does not know what he should order on the basis of his knowledge before utterance of (12).

Now consider A’s information state after learning the content of (12). Now the possibilities where only salmon is tasty have been eliminated, yielding a new ordering:

$$(15) \quad \{T_s\} <_\sigma \{T_p, B_p, B_s\}$$

Given this information, ordering tuna can be taken to be an optimal action: you cannot go wrong by choosing tuna, since it will never lead to a situation that is ranked lower than another. Of course salmon might also be good, but we don’t know this for sure, and in any case there is no situation in which choosing salmon puts A in a better

position than choosing tuna. For the proposed presupposition to be satisfied, it is not required that one choice be the only best one, but only that there be at least one sure-fire choice. This analysis proves to be slightly too strong in that it is sufficient for the options to be narrowed down (or even just altered) for *yo* to be felicitous, but we take it that the basic idea is clear.

The theory in Davis (2009) is extensively revised in Davis (2011). Details aside, Davis (2011) breaks the contribution of *yo* into the particle itself, and one of two associated intonational contours (rising or falling). The particle (rather than the associated intonation) is argued to make the associated update target the addressee's public commitments. Falling intonation combined with *yo* is then argued to contribute a kind of 'downdate' semantics, requiring the addressee to remove some pre-existing commitment. Rising intonation gives rise to the "relevance" implication, stated in terms of decision problems. Details aside, the major thrust of this work is that the contribution of the particle and its associated intonational contours should be distinguished, and that moreover a unified semantics for *yo* and its intonational associates across different clause types (declarative, imperative, and interrogative) is possible. In fact, most work on *yo* is largely or exclusively concerned with its behavior in declaratives (and the associated speech act of assertion); Davis (2011) is largely unique in giving equal treatment to the use of *yo* in imperatives and interrogatives as well.

Oshima (2014) challenges some of the empirical generalizations made in Davis (2011), showing that the association between particular pragmatic functions and particular intonational contours is not as straightforward as that theory predicts. In particular, Oshima argues that "correction" (modeled by Davis as downdate, following earlier proposals by McCready) is not a sufficient condition on the use of *yo* with falling intonation. Moreover, Oshima provides examples showing the over-restrictiveness of the optimality metric that Davis uses to model the idea that rising intonation with *yo* indicates relevance.

Analytically, Oshima argues that, contra Davis, a compositional analysis dissecting the particle from its intonational contour is untenable, and individual combinations of particle and intonation should be analyzed holistically. He also distinguishes three distinct intonational patterns, in contrast to the two posited by Davis. From this starting point, Oshima proposes refinements to the analysis of *yo* in declaratives aimed at overcoming the empirical difficulties he argues follow from earlier treatments, and lays out a number of additional uses of the particle that do not fall under his account either. He does not discuss the use of *yo* in non-declaratives, and it is unclear how or whether the analyses he gives of the three particle-intonation combinations are intended to extend to imperatives and interrogatives.

Conceptually, Oshima's general approach contrasts with that of Davis in arguing that a compositional analysis (one particle, a handful of intonational contours) employing a unified semantics across sentence types and particle-intonation combinations is untenable. This is a general tension in the study of these particles: to what extent can a unified, compositional account be achieved, and what is the alter-

native if it cannot? Moreover, since the data is fundamentally pragmatic, it is a subtle question how one maps particular theories onto testable empirical predictions. One thing that becomes clear from the development of this literature is that theories built directly on vague notions like “relevance” or “strength” are, on their own, difficult to translate into empirically testable claims. Only when these notions are spelled out in concrete theoretical terms that have clear empirical implications can progress be made in the study of these particles.

### 3.1 Other notification particles

There are a number of other notification particles in Japanese. Prominent among these are *zo* and *wa*, though neither have received much attention in the formal literature. Consequently, we will discuss them only very briefly; their analysis seems to be a promising area for future research.

The particle *zo* is commonly associated with masculine speech (in the sense of gender). It seems quite parallel to *yo* in many respects: for instance, it induces the sense of insistency that we have seen with that particle, though in the case of *zo* this forcefulness is, if anything, stronger.<sup>10</sup> However, it also exhibits significant disanalogies in its distribution. While *yo* can appear with imperatives, *zo* cannot, as well as several other clause types; in general, *zo* is highly restricted in the environments in which it is found. To our knowledge, these facts have not yet been explained.

Even less studied in the formal literature is the sentence-final particle *wa*, which is distinct from the topic-marking *wa* (or so we believe): to our knowledge, it has not been touched on at all, despite being relatively common in spoken language. This particle has two realizations. One is commonly used in the Japanese spoken in the Kansai region and has a meaning very similar to *yo*; another *yo*-variant in Kansai is *de*. Interestingly, while both *wa* and *de* can be used in declarative sentences, neither is compatible with imperatives, unlike *yo*; rather, the particle *ya* must be used. The Kansai-dialect copula has the same phonological shape as *ya*, but it is not clear whether the two should be equated. In Eastern or ‘standard’ Japanese, *wa* is associated with feminine speech; it has a *yo*-like meaning but also seems to have an emotive, evaluative component. Further research is needed to properly understand the functions and meaning of these particles and their interrelationships.

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<sup>10</sup> It also affects modal subordination, a topic we have not discussed in detail in this paper; these are cases where an anaphoric relation between a nonspecific indefinite in the scope of a nonveridical operator and a later pronoun is enabled, despite its usually being infelicitous (see e.g. Roberts 1989; Geurts 1999; Asher and McCready 2007 for discussion, analysis, and further references). Usually the operators that induce modal subordination are (as the name suggests) modal, but *yo* can also do so (as shown by McCready 2005, 2008a, b) and so can *zo* (McCready, 2005). We will not discuss the modal subordination data further in the present paper, but it shows interesting relationships between particle meanings and modal meanings which are not yet fully understood.

## 4 Confirmation particles

### 4.1 *Ne* and *na*

This section presents data related to what for convenience we call *confirmation* particles, in particular *ne* and *na*. Note that in this section we are considering only the *na* that is an analogue to *ne* in male speech and the dialects of Western Japan; *naa* with a lengthened vowel has a rather different meaning and will not be discussed here. *Ne* and *na* are often described in the literature as being used to request confirmation from the hearer about the sentence's propositional content. But it will turn out that the meaning of *ne/na* is rather more general, and the 'hearer-orientedness' noted by past researchers is an artifact of the combination of this meaning and certain intonational contours. Consequently we will have occasion to discuss intonation in some detail, just as we did with *yo* in the previous section.

The basic intuition about the meaning of *ne/na* is that the particle serves to indicate that the speaker is trying to get confirmation of the content of the sentence from the hearer. This sort of meaning arises in sentences like (16), which generally appear with rising intonation:

- (16) a. *Miitingu wa sanzi kara des-u ne?*  
 meeting TOP 3:00 from COP.POL-NPST SFP  
 'The meeting is at 3, right?'  
 b. *Anta no kaisya wa moo toosan da ne.*  
 you GEN company TOP soon bankrupt COP.NPST SFP  
 'Your company'll be bankrupt soon, huh.'

However, *ne* and *na* also have a use that is clearly speaker-oriented, as in the examples in (17). Here, it does not seem that hearer confirmation is being requested, for in (17a) the propositional content of the sentence need not be endorsed by the hearer to be true (since it expresses an attitude of the speaker, cf. Mitchell 1986), and in (17b), the sentence describes an intention of the speaker that may well be new information from the hearer's perspective. This reading is generally associated with falling intonation.

- (17) a. *Koko no gyooza wa uma-i ne, yappari.*  
 here GEN dumplings TOP be.good-NPST SFP as.expected  
 'The dumplings here are good right, like I thought.'  
 b. *Kono hon asita motte-ki-mas-u ne.*  
 this book tomorrow hold-come-POL-NPST SFP  
 'I'll bring this book tomorrow, OK?' (Eda 2000)

Thus it is not sufficient to simply say that these particles ask for hearer confirmation; in some cases, as in (17), the idea of requesting confirmation does not even make sense.<sup>11</sup>

We begin by considering some accounts found in the literature. Masuoka and Takubo (1989) state that *ne/na* expresses that the speaker believes the hearer to have the information in the statement already. Thus *ne/na*-marked sentences can serve to request confirmation or express that the speaker believes that the hearer is already aware of the content of what he's saying. But this sort of view won't give an automatic analysis of the cases in (17), for, at the level of semantic content, these sentences cannot be analyzed as specifying an individual whose attitudes are at issue, as shown by Lasersohn (2005). The possibility of speaker-oriented readings in these sentences already shows that *ne/na* cannot simply be viewed as 'checking' something in the hearer's information state. More concretely, suppose that the propositional content of (17a) is something like *tasty(gyoza)*. If the function of the particle is to simply check whether the hearer has this belief, it will turn out hearer-oriented (as the hearer will be the judge of tastiness), at least by default; hearer beliefs about tastiness are normally associated with the hearer, though this default can be overridden (cf. McCready 2007). The problem is even more severe for (17b); presumably the speaker, in announcing her plan to bring the book tomorrow, is not anticipating that the hearer is already aware of it.

Another view is provided by Suzuki Kose (1997). On her account, *ne* indicates that the speaker believes the addressee is committed to the content of the utterance, which, for declaratives, indicates belief. For Kose, the use of rising *ne* (which she writes *ne?*) means that the speaker suspects that the addressee is committed to the propositional content, while the meaning of falling *ne* is just the default described by the above rule.

This analysis requires that the two *ne*'s, rising and falling, are treated as distinct lexical items, for the first is strictly weaker than the second, meaning that the default cannot apply at all; but it is at least plausible that one lexical item is in use, and the differences in meaning that exist are due to the meaning associated with the differing intonational contours. Kose's analysis also makes several problematic predictions. First, *ne* is predicted to be unusable with new information; however, it is in fact possible to use *ne* with new information when it is used with falling intonation. This fact suggests that the role of intonation in the analysis needs to be brought to the fore, rather than buried. Second, Kose claims that because *ne* makes reference only to the hearer's cognitive state, the speaker need not be committed to the propositional content of a *ne*-marked sentence.<sup>12</sup> Kose offers as evidence an example of a dialogue

<sup>11</sup> Of course, it is possible to imagine contexts in which such readings could exist; McCready (2007) discusses some such with respect to the closely related issue of personal taste predicates in questions.

<sup>12</sup> Kose states, for instance, that "when the speaker uses *ne* after a directive, he may or may not want the addressee to perform the action expressed by the directive" (Kose 1997: 97).

involving declarative sentences (Kose 1997: 98) where she claims that no commitment is necessary, reproduced in example (18).<sup>13</sup> We have deviated from Kose's glosses in the interest of ready understanding.

- (18) A (sister [Mari]): *Mari-tyan kumo no ue ni nor-e-ru mon.*  
 Mari-DIM cloud GEN top LOC ride-POT-NPST SFP  
 'Mari (I) can ride on clouds.'
- B (brother): a. *Mari-tyan kumo no ue ni nor-e-ru ne?*  
 Mari-DIM cloud GEN top LOC ride-POT-NPST SFP?  
 'Mari can ride on the clouds, huh?'
- b. *Soo dat-tara kumo wa Mari-tyan ga*  
 so COP-COND cloud TOP Mari-DIM NOM  
*nor-e-ru kurai kata-i ne?*  
 ride-POT-NPST as.much be.solid-NPST SFP  
 'If that's so, then the clouds must be solid enough for you to stand on, right?'
- c. *Sosit-ara hikooki wa kumo ni*  
 do.that-COND airplane TOP cloud GOAL  
*butukatte-sima-u ne?*  
 bump-put.away-NPST SFP  
 'Then airplanes should bump into them, right?'

The idea here is that the brother's utterances don't commit him to a belief that Mari can really ride on clouds; and certainly, this dialogue does not commit him to this claim. But is this really evidence for a particular interpretation of *ne*? The sentence is uttered with rising intonation, giving an interpretation like that of a polar question; plainly, use of a polar question does not commit the speaker to its propositional content. This will be so regardless of the particular content of the question. With respect to particles, there are two scope possibilities: either the particle scopes over the question, in which case no speaker commitment is expected to the propositional content, or the question over the particle, in which case the content of the particle is presumably questioned anyway. (Here the former seems to us more probable.) Thus it seems to us that this dialogue does not represent substantial support for a view of *ne* on which it does not commit the speaker to the sentential content.

Noda (2002) states that *ne* indicates that the speaker is trying to unify the content of the sentence with something already present in the discourse. The object of the unification may be in the hearer's knowledge; in this case, *ne* confirms that the hearer

<sup>13</sup> Here the particle *mon* (a contraction of *mono*) is used; it generally indicates explanation. See McCready and Takahashi (2013) for details.

already knows the information conveyed by the sentence. Alternatively, the content may be in the speaker's information state, in which case *ne* indicates that the speaker has the proposition already in his knowledge store. How is it determined which reading of *ne* should appear in a given context? The answer to this question lies in the intonation of the sentence, to which we now turn.

## 4.2 *Ne/na* and intonation

*Ne/na* can appear both in sentences with rising intonation and sentences with falling intonation. Many authors have observed that the interpretation of the particle differs depending on the overall intonational contour of the sentence: the general consensus is that the 'hearer-oriented' use of *ne/na*, on which it asks for confirmation of the sentence content from the hearer, is associated with sentence-final rising intonation, while the reading on which *ne* simply emphasizes that the speaker knows the proposition is associated with falling intonation (cf. Oshima 2016). A good deal of experimental work has verified these claims in their broad outlines, though it is clear that the intonational contour in question is perceptual rather than absolute. This perceptual basis is shown particularly well by the work of Sugito (2001), who studies the phonetic correlates of rising/falling *ne*. She agrees that rising *ne* asks for hearer confirmation, and that 'falling' *ne* marks what she calls self-confirmation (*zikkakunin*), which presumably is similar to the concept discussed by Noda above, where the content in question is in the speaker's information state rather than the hearer's. Interestingly, however, her research shows that so-called 'falling' *ne* isn't always phonetically falling – rather, the intonational contour can actually be rising at the end of the sentence, but still be perceived as falling. Particularly steep rises do tend to be perceived as rising, resulting in a hearer-oriented reading, however.<sup>14</sup> We will not consider phonetic correlates of perceived intonational contour in detail here, simply assuming that sentences are associated with either a (phonological) rising or falling intonation.

Moriyama (2001) agrees that rising *ne* asks for hearer confirmation. He provides the following interesting example. Here the sentence is ambiguous between a reading in which it asserts that the book is interesting and a reading in which it asserts that the book is one that is available for borrowing. Interestingly, intonation disambiguates these two readings: rising intonation selects the 'borrowing' reading, and falling intonation the 'interesting' reading.

<sup>14</sup> Sugito also shows that a rise only on the vowel in *ne* (so that *e* only is raised, but not *n*) also produces a bias toward perception of *ne* as rising, resulting in a hearer-oriented reading.



- (19) a. *Kono hon, i-i ne*↑  
           this book be.good-NPST SFP (rising)  
           ‘It’s OK to borrow this book, right?’
- b. *Kono hon, i-i ne*↓  
           this book be.good-NPST SFP (falling)  
           ‘This is sure a good book.’

Moriyama verified this judgment using survey questionnaires (Moriyama 2001: 38–41). Another experiment tested a similar phenomenon involving the following sentences. Here, rising intonation is bad in the first sentence and good in the second:<sup>15</sup>

- (20) a. *Watasi wa iya des-u ne* (↓ / #↑)  
           I TOP bad COP.POL-NPST SFP  
           ‘It is bad for me.’ / # ‘It is bad for me?’
- b. *Kimi, ikimas-u ne* (# ↓ / ↑)  
           you, go-POL-NPST SFP  
           ‘You’re going, right?’ / # ‘You’re going.’

What is the cause of these two contrasts? Intuitively, they both fall out from the assumption that rising intonation on *ne* produces hearer orientation. The main predicate used in (19) is *ii* ‘good’, which presents a judgment about the value of something. Such judgments are usually dependent on the speaker in assertions (Mitchell 1986), so it makes sense that in contexts in which hearer-oriented readings arise such as (19a), a different reading (on which additional material is understood as elided) is preferred. Similarly, since the speaker is presumably clearer about his own opinions than his interlocutor is, rising intonation in (20a) is peculiar; conversely, since individuals ordinarily decide on their own actions, it is odd to use non-hearer-oriented falling intonation in (20b). However, there is a problem with this argument that arises with (19) and (20a): although in assertions ‘mental predicates’ like these are ordinarily speaker-oriented, this does not hold for environments like questions, where the hearer’s evaluation of something is usually being questioned (Mitchell 1986).

Thus we see that the term ‘hearer-oriented’ for *ne* and *na* is really a misnomer; these particles can also be oriented to the speaker. To summarize the points discussed: *Ne/na* marks sentences whose content is assumed to be already known to the hearer, in some cases, and the speaker, in others, depending on the intonation of the sentence. An important task of future research is to develop a formal, compositional analysis of *ne/na* and its two intonational associates. As discussed in the previous

<sup>15</sup> Note that some subjects found the opposite readings possible, with a dose of strong emotion; probably this is just due to flouting of ordinary standards of conversation.

section, Davis (2009, 2011) has argued for such a decomposition of *yo* and the two intonational contours (rising and falling) with which it occurs. It is an interesting and open question whether a compositional approach can unify the meaning of the intonational contours across both particles, and also maintain a unified analysis for each individual particle. We think that future progress on both classes of particles, which we have here labeled ‘notification’ and ‘confirmation’ particles, will best be achieved by paying close attention to the role of intonation, which should be carefully distinguished from the role of the particles themselves.

## 5 Particle combinations

The above sections have looked at the use of the three major classes of particles in isolation. We have already seen that the study of these particles requires attention to be paid to the sentence-final intonational patterns with which they co-occur. An additional complication comes from the fact that the particles can appear in combination with one another, giving rise to systematic but complicated and, as yet, relatively understudied semantic and pragmatic effects. As discussed earlier, the combination of these particles obeys the strict ordering *ka* < *yo* < *ne*. The full range of combinatoric possibilities are illustrated by the following examples, provided with rough English translations. These translations are approximations to one out of, in some cases, several distinct pragmatic interpretations; these distinctions may in turn depend on intonational differences, as discussed in the sections on the individual particles. First, the bare sentence in (21) is interpreted as simple assertion, provided that the sentence is accompanied with a final fall. The use of a final rise instead makes the sentence a type of polar question.

- (21) *Aitu to issyoni ik-u.*  
       he   COM together go-NPST  
       ‘(I will) go with him.’

The unspecified subject of this sentence has been translated as the speaker; this is a natural interpretation in a “null” context, but not the only one. As seen below, the use of certain particle combinations can bias this interpretation in other directions.

The use of particles in isolation was discussed in the individual sections describing these particles; examples (22–24) illustrate their use with the above sentence:

- (22) *Aitu to issyoni ik-u ka?*  
       he   COM together go-NPST Q  
       ‘Will (you) go with him?’

- (23) *Aitu to issyoni ik-u yo.*  
 he COM together go-NPST SFP  
 ‘(I will) go with him, man.’

- (24) *Aitu to issyoni ik-u ne.*  
 he COM together go-NPST SFP  
 ‘(I will) go with him, ok?’

Note that the use of *ka* in (22) generates a “standard” polar question interpretation only in conjunction with a final rise. In this case, the null subject is naturally understood as referring to the addressee. If a final fall is used instead, the utterance is more naturally interpreted as a kind of rhetorical question, with two distinct interpretations. In one interpretation, the question is biased toward the negative answer, and the interpretation of the null subject is naturally interpreted as referring to the speaker: “Would I go with someone like him? No way!” Alternatively, the rhetorical question can be interpreted as granting the truth of the positive answer, and registering the speaker’s surprise at its truth. In such cases, the null subject is naturally resolved to the addressee: “Whoah, you’re going with someone like *him*?”

Interestingly, the use of *yo* with *ka* forces this type of rhetorical interpretation, as illustrated in (25).

- (25) *Aitu to issyoni ik-u ka yo.*  
 he COM together go-NPST Q SFP  
 ‘As if (I) would go with him!’ / ‘Whoah, you’re going with him?’

As discussed in Section 3, *yo* can generally occur with either a rising or falling intonation, but in conjunction with *ka*, only a final fall is possible. This restriction deserves further investigation; it is unclear at this point whether the final fall in sentences ending in *ka yo* should be thought of as identical to the final fall found in rhetorical uses of *ka* sentences more generally, or whether it (also) makes the same contribution that a final fall does in other *yo* sentences.

The fact that *yo* in conjunction with *ka* forces a rhetorical interpretation of the question is discussed in Davis (2009, 2011). The use of *ka yo* has a rough and even aggressive flavor. This restriction is reflected in the fact that *ka yo* can only be used with “plain” or non-polite verbal forms; the following example, in which *ka yo* is used with the polite form of the verb, is bad to the point of ungrammaticality (note that the non-polite third person masculine pronoun *aitsu* has been replaced with the neutral third person masculine pronoun *kare*):

- (26) \**Kare to issyoni ik-imas-u ka yo.*  
 he COM together go-POL-NPST Q SFP

Note that this restriction cannot be attributed to either of the particles in isolation; both *ka* and *yo* are, on their own, perfectly compatible with polite verb forms.

Although the topic requires further investigation, it seems that in general the rhetorical uses of *ka* described above do not arise with polite verb forms. Moreover, the interpretation does not arise in the absence of *ka*; the following example, in which the particle *no* is used, has a standard information-seeking interpretation when used with a final rise, and a standard assertive interpretation when used with a final fall.

- (27) *Aitu to issyoni ik-u no?/.*  
 he COM together go-NPST SFP  
 ‘Will (you) go with him?’ / ‘(I) will go with him.’

Recently, Taniguchi (2016) has given an analysis of *ka yo*, building on that of Davis (2011), arguing that sentences with *ka yo* indicate what she calls a “self-directed corrective.” As with Davis (2011), Taniguchi pursues a compositional analysis, the difference lying in the details of exactly what morphemes underlie the construction and what their exact contribution is. In any case, the data above show that the rhetorical character of this kind of question does not depend on *yo* itself, but that the use of *yo* forces this kind of interpretation.

The sentence in (28) illustrates the use of *ka* in conjunction with *ne/na*. As indicated by the English gloss, the effect of adding *ne/na* is roughly to make the sentence into a kind of self-addressing question, which simply expresses the speaker’s own state of wondering, rather than directly asking the addressee for an answer. Perhaps for this reason, the null subject is naturally resolved to a third person, rather than to the addressee (although the latter interpretation is also possible).

- (28) *Aitu to issyoni ik-u ka ne/ na.*  
 he COP together go-NPST Q SFP/ SFP  
 ‘I wonder if (she) will go with him.’

The question of which intonational pattern(s) *ne/na* can occur with in conjunction with *ka* is, as far as we are aware, an unexplored question, as is the difference (if any) between the use of *ne* and *na* in this construction.

While the particle combinations discussed above have remained relatively un(der)explored, the combination of *yo* and *ne* in assertive sentences has received some attention (Takubo and Kinsui 1997; McCready 2009). The use is illustrated in (29).

- (29) *Aitu to issyoni ik-u yo ne.*  
 he COM together go-NPST SFP SFP  
 ‘(You will) go with him, right?’

These sorts of uses are puzzling to the extent that one takes *yo* and *ne* to be, in some sense, complementary. Concretely, assume an analysis on which *yo* marks information the speaker takes to be hearer-new, and *ne* marks information which the speaker takes to be hearer-old. These interpretations are not compatible. How then can a sentence be marked with the sequence *yo ne*? One possibility is to take a noncompositional view, according to which (29) includes a single particle, *yone*, instead of a sequence of two particles. Another possibility is to revise the semantics in such a way that the interpretation comes out consistent. This problem is discussed in some detail by McCready (2009) and also by Takubo and Kinsui (1997).

Although there is some disagreement among speakers as to its grammaticality and interpretation, it seems that *yo ne* is also found after *ka*, as illustrated in (30).

- (30) *Aitu to issyoni ik-u ka yo ne.*  
       he COM together go-NPST Q SFP SFP  
       ‘As if (I) would go with him, right?’

The combination *ka yo ne* has not, to our knowledge, been described, let alone analyzed, in the literature on SFPs. The combination is understood as a negative rhetorical question (as seen above for *ka yo*) with an additional request for addressee confirmation of the speaker’s own view. The combination appears, on its face, to be compositionally derived from the use of *ka yo* (expressing a negative rhetorical question) and *ne* (seeking addressee confirmation). However, here, a pause seems to be required between the *ka yo* and the following confirmation particle *ne*; this fact makes it likely that this sort of case should be treated as composed of the particle sequence *ka yo* followed by a metalinguistic comment expressed by *ne*. We leave confirmation of this analysis as an open question for the purposes of this survey.

The above discussion shows that every logical particle combination is attested (at least in the orderings discussed), although the status of *ka yo ne* is debatable. This suggests, we think, that the meaning of such particle combinations should be pursued under the assumption that they are compositionally derived from the meanings of the individual particles, in combination with whatever final intonational contours these combinations allow. We think that future research on Japanese SFPs will make progress by focusing on particle combinations, which at once provide additional data for determining the core meanings of individual particles, and also potentially rule out certain analyses which would make such combinations illicit, or which would predict incorrect meanings for combinations of particles. One such class of analyses are those that treat *yo* and *ne* as being essentially opposites, as discussed above. Such analyses will, as we have seen, have trouble handling the fact that the combination of *yo* and *ne* is not only possible, but common.

Another way in which combinations of particles can inform future research derives from the order in which they are found. As discussed in Section 1, there is

a long tradition suggesting that the linear order of right-peripheral elements in Japanese maps onto a natural semantic/pragmatic ordering as well. Formally, this fact suggests a view in which the order of particles reflects their semantic types, with the position of particle determined by the kind of semantic objects found at different layers of sentence structure. Such an approach to particle and intonational meaning is pursued in Davis (2011), which focuses on *yo* and its associated intonational contours across a range of clause types. The idea pursued there is that the region of SFPs and sentence-final intonation are ways of spelling out an articulated region of *sentential force* or *mood*, in the tradition of Lewis (1970), mediating the truth-conditional core of a sentence with its pragmatic speech-act level interpretation.

Regardless of the details of formal implementation, the SFPs discussed in this chapter are of clear interest from the perspective of how semantic meaning interfaces with pragmatics. These issues are discussed in the next section.

## 6 Implications: Semantics versus pragmatics

As we have seen, sentence final particles occupy an intriguing position at the interface of semantics and pragmatics. At least in Japanese, some of these particles *semantically* indicate certain pragmatic aspects of the role their host utterance plays in the discourse. For example, consider again the particle *yo*, which we have discussed in some detail. As we showed there, this particle requests update at all costs when uttered with falling intonation; when used with rising intonation, it indicates that the utterance it marks changes the degree to which the current question under discussion can be viewed as resolved. These appear to be the empirical facts. But they raise some intriguing and puzzling questions. How can it be that a linguistic object internal to a sentence can say something about the pragmatic status of that sentence? The particle is *part* of the sentence; how then can it specify something about the *action* that ought to be performed with that very sentence? And what sorts of meanings are these? The answer – one might think – should relate to the ability, or inability, of particles to be stacked, though we will not be able to consider this issue in detail in the present context. The meanings themselves raise puzzles, in that they seem to do no more than highlight already present aspects of pragmatic meaning. The answers to these questions, and to issues relating to particle meaning more generally, have substantial implications for other aspects of the semantics-pragmatics interface. If, as it appears, particles do reference pragmatic aspects of interpretation, does this support other operator- based analyses of pragmatic phenomena such as the ‘invisible operator’ approach to implicature generation (e.g. Chierchia 2004)? More generally, what do particles indicate about the organization of the grammar? This section will address these questions, though our discussion will be somewhat preliminary for reasons both of space and of (un)settledness.

Let us first flesh out the issue by considering a particular instance of a sentence with a particle. Take a standard instance of a particle-including sentence like (31).

- (31) *Ame ga hut-tei-ru yo.*  
 rain NOM fall-PROG-NPST SFP  
 'It's raining, man.'

Davis (2009, *inter alia*) has argued that the meaning of this sentence can be represented as the application of an operator denoted by *yo* to the proposition denoted by *ame ga hutteiru*, yielding something like *yo(r)*. The interpretation of this sentence, then, assuming that it appears with rising intonation, is that *r* is relevant in some way to the question under discussion, either in that *r* helps to resolve the question under discussion (QUD) or that its truth shows that the QUD is less resolved than it previously seemed. For example, supposing that the QUD is 'Should I take an umbrella?', then *r* would (in most circumstances) resolve it; alternatively, supposing that other considerations dictated that the addressee probably would not take an umbrella, learning *r* might destabilize this resolution and reopen the issue.

The meaning above is a pragmatic one. The notion of a QUD is already pragmatic. It seems unlikely that it is possible to determine the QUD in the absence of a context of utterance, and indeed the very idea doesn't make much sense. McCready (*in press*), starting with the common assumption that QUDs can be viewed as salient decision problems, argues that the problem of determining the current QUD crucially involves reasoning about the possible goals of the conversational participants and selecting a decision problem from an available space of possibilities. But there is something puzzling about the resulting picture. The traditional view of the semantics-pragmatics interface is that a semantic representation is computed on the basis of syntactic and lexical input, and that this semantic representation is in turn the input to pragmatics.<sup>16</sup> One might wonder whether this view is compatible with the theory (or theories) of particles that we have discussed.

On any of the views we have examined, particles have a pragmatic function. They have been viewed as indicating the relevance (in the Gricean sense) of the sentence that hosts them, as directly modifying the speech act performed, as increasing the forcefulness of the claim made, itself a kind of indirect modification of a speech act. All of these views require the assumption that the particle meaning is not part of the 'proper' meaning of the sentence. For suppose that it was. Then (31) would mean

<sup>16</sup> This model has been called into question recently on the basis of various kinds of (what appear to be) 'pragmatic intrusions' into semantic content. For example, to take a standard kind of example in the literature, the sentence 'It is raining' is generally interpreted as claiming that it is raining at the speaker's location, although the sentence does not (overtly) make this claim. See (*inter alia*.) Cappelen and Lepore (2005) for extensive discussion.

*yo(r)*. Further suppose (for the sake of illustration) that the ‘forcefulness’ analysis is the correct one. Then we end up with a paradoxical situation: either (i) the strengthening function of *yo* must somehow be externally imposed on the sentence meaning – which already contains the meaning of *yo* – or the meaning of the particle must be part of the content which is strengthened and operate on the speech act ‘from the inside’, which seems nonsensically self-referential. This argument shows that the particle meaning cannot be part of the ordinary semantic content.

This being the case, it is necessary to decide what category of meaning particle meaning should belong to in order to give a complete formal analysis. Given our current understanding of the types of not-at-issue meanings available in natural language, this amounts to determining whether particles are presuppositional or expressive in nature.<sup>17</sup>

In the literature we can find both views. Davis (2009, 2011), for instance, takes the particle *yo* to introduce expressive content; McCready (2005, 2009), on the other hand, takes *yo* to come with a presupposition that the information in the sentence it hosts is hearer-new. It’s hard to say which of these views (if either) is correct. The usual ways of distinguishing expressive content from presupposition involve tests such as deniability and the independence of the content in question from ordinary semantic operators such as negation (see e.g. Potts 2005); but these tests do not seem particularly applicable in the case of particles. While their meanings do not seem to fall in the scope of other operators, this would seem to be because those meanings, being essentially pragmatic or even procedural, aren’t really the sort of content which *could* even in principle be negated or otherwise fall under the scope of standard truth-conditional operators. Thus, it remains unclear whether the impossibility of e.g. embedding is the result of particle meanings being expressive or whether it is the result of their just being non-truth-conditional in nature.

But the whole question of the kind of meaning associated with *yo* is also difficult to address for another reason. The analyses in terms of strengthening and relevance both have a common element. They highlight already present aspects of speech acts

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<sup>17</sup> Of course, these are not the only logical possibilities: they could also introduce conversational implicatures, directly modify speech acts, or act in a completely different way. But none of these options are completely straightforward. For the first, since use of particles seems to modify sentence meanings in a nondefeasible way, an analysis in terms of conversational implicature looks problematic, as cancellability is usually taken to be a defining feature of such implicatures. The notion of speech act modification is in itself unproblematic, but spelling it out in a formal theory of composition requires it to take one of the two forms mentioned in the main text if the modification is to be viewed as taking place through the medium of an operator introduced in the semantic composition process. The possibility of a third approach remains, of course; one might for instance take the mere presence of a particle to induce a new speech act in a way independent of semantic composition (perhaps via some inferential mechanism). But in the absence of a worked-out theory of this kind, we will put such possible views aside here.



(assertion in the cases we have focused on here). If one accepts the characterization of cooperativity given by Grice (1975), assertions should convey the proper amount of information (given Gricean Quantity) that is useful for some current purpose (given Relevance). Further, if a speaker is cooperative, then she ought to try to help her interlocutor acquire useful information, likely at the cost of being forceful in some situations. But these are just the proposed meanings of *yo*. For this reason, it isn't obvious how to show that either of the proposals makes wrong predictions: to do so, it would be necessary to find a case where either (i) the proposed particle meaning is not observed in a sentence with a particle, or (ii) a sentence without a particle nonetheless has the proposed meaning. Given that the proposed meanings are close to being universal properties of utterances, however, cases like (i) ought never to arise, and cases like (ii) ought to arise in virtually every case.

Still, there is a means to test the proposals, one implicitly used by the range of authors working on the Japanese particles. Recent work in formal pragmatics (e.g. Schlenker 2012) proposes a principle of presupposition maximization: roughly, given possible linguistic forms *A* and *B*, where *B* contains a presupposition, the use of *A* implicates that (the speaker believes that) the presupposition of *B* is not satisfied in the current context. The same likely holds for expressive content (see e.g. Davis 2009, 2011, as well as McCready (2019) for extensive discussion). Applying this principle to the present discussion, use of a sentence *S* without *yo* indicates that the meaning of *yo* is not currently appropriate. This explains the infelicity of (9) when no particle is used; the lack of a particle implicates that forcefulness is not required despite the obvious lack of willingness of the hearer to accept the proffered content (given a strengthening view), which provides some support for a picture based on strengthening.

All in all, the meanings of particles represent an interesting case from a variety of perspectives. From the descriptive side, they appear highly various and vague; as we have seen, it is difficult to individuate particle meanings and to tell for certain whether there are ambiguous particles or simply general meanings which take on different roles according to the contextual circumstances. From the theoretical side, the problem of characterizing meanings like those of particles, which mix pragmatic and semantic effects in sometimes unpredictable and certainly complex ways, is difficult and interesting. As a consequence, a good deal of work is being done in the area. Our knowledge of particles is expanding quickly and many new discoveries are being made, in Japanese as well as in other languages such as English, German, and Chinese.

## Additional abbreviations

DIM – diminutive, GOAL – goal, NPST – nonpast, POT – potential

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**VI Meaning in context:**  
**Inter-speaker modality and pragmatics**



## 15 Nominal deixis in Japanese

### 1 Introduction

This chapter deals with nominal deixis, that is, noun expressions whose meaning involves crucial reference to speech context – speech location, speech time, and the relationship between speaker and addressee.<sup>1</sup> Depending on which of these three elements of speech context is at issue, research in deixis is traditionally divided into the three domains of spatial, temporal, and personal deixis.

Personal deixis has to do with the speaker, the addressee, and discourse topic. It can also be seen to subsume textual deixis and anaphora, i. e. how the text or speech is organized in terms of discourse participants.

Spatial deixis is concerned with how speech locations are partitioned or structured in language and how they are utilized in language. Typically, spatial deictic expressions take the speaker's location of *here* as the deictic pivot or center. Sometimes the deictic center can be expanded to other locations related to the speaker, such as extensions of the ego of the speaker to include others or locations where the speaker expects to be in the future. Verbs of movement variously take as their pivot the location of the speaker, as in *Come in* in response to someone knocking, the location of the addressee, as in *I'm coming*, or a future location of the speaker, as in *Are you coming to the meeting in Tokyo tomorrow?*<sup>2</sup>

Temporal deixis has to do with temporal expressions, the interpretation of which requires reference to the utterance time of *now* as pivot. Expressions such as *today*, *tomorrow*, *yesterday*, *this year*, and *next year* can all be defined with respect to this utterance time. The reference of these deictic time nouns thus varies according to when they are uttered, so that if one writes *I will come to your office tomorrow*, the word *tomorrow* denotes 'the day after the day that includes the time of writing' and can only be understood if the time of the writing is known. Tense is a grammatical category that can be characterized as being deictic, in the sense that temporal notions such as present, past, and future are defined in relation to *now*. Tense is attached to a verb phrase and exploits such temporal notions to situate the event denoted by the verb phrase with respect to *now*. For treatments of the tense system of Japanese from various approaches – formal, discourse, and cognitive – see the chapters by S. Kaufmann (this volume), Kudo (this volume), and Jacobsen (this volume).

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<sup>1</sup> See Fillmore (1997) for a general introduction to the notion of deixis and phenomena related to deixis.

<sup>2</sup> For an in-depth treatment of verbs of motion in English and Japanese, see Ohye (1975: Chapter 1).



Some have posited social deixis as yet another category of deixis. One important variety of social deixis is honorification, a category of meaning that receives complex expression in Japanese in various forms: *teineigo* (addressee honorifics), typically involving affixation of the suffix *-masu* (politeness marker) to a verb form to express politeness to the addressee, *kenjōgo* (humble forms), used to express respect to entities in a clause other than the subject, and *sonkeigo* (deferential forms), used to express respect to the subject entity. For an in-depth treatment of honorifics, see Pizziconi (this volume).

In this chapter, I will focus on two main topics: personal deixis and demonstratives. Personal deixis in Japanese is somewhat unique in that Japanese does not have a personal pronoun system as do many European languages such as English. I will provide an account of how personal deixis is expressed in a language lacking personal pronouns. Demonstratives are a category of spatial deictic having to do with the partitioning of deictic space in which to situate the object referred to. Demonstrative partitioning in Japanese has been characterized by some as a kind of personal deixis, with the so-called *so-* demonstratives exhibiting properties of both spatial and personal deixis, but I will argue against this view in this chapter.

The chapter is organized as follows.

Section 2 is dedicated to a description of the characteristics of personal deixis in Japanese. Japanese does not have grammatical agreement, at least in any overt morphological form. Unlike personal pronouns in English and other European languages, expressions for person in Japanese form an open class. This section will consider how person information is expressed in Japanese, focusing in particular on personal nouns (called such for reasons to be explained later) and address terms used in referring to the speaker, the addressee, and third persons.<sup>3</sup>

Section 3 deals with demonstratives, significant in Japanese for the way they form a closed class with rich morphological variation. In addition to their pragmatic use in Japanese, this section will consider their semantic and syntactic character as well. Beginning with an overview of past works on Japanese demonstratives such as Matsushita (1930), Kuno (1973), Kuroda (1979), Kinsui and Takubo (1990), and Takubo and Kinsui (1997), this section will point out various problems in these works and present a solution to these problems within the framework introduced in Takubo (2008), based on work by Hoji et al. (2000b, 2003).

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<sup>3</sup> See Mikami (1972) for a discussion of the relationship between grammatical person and demonstratives.

## 2 Pronouns, names and address terms

### 2.1 Personal nouns

There is some debate as to whether Japanese in fact has personal pronouns.<sup>4</sup> Personal pronouns in most European languages basically consist of a bundle of *phi* features, that is, grammatical features that enter into an agreement relation with the conjugational forms of verbs. English personal pronouns, for example, are defined in terms of person, number, and gender, the last of these not playing as major a role in the conjugation system of English as in other European languages. The English pronoun system is a closed class, to which no new addition is possible, at least synchronically. By contrast, Japanese counterparts to “pronouns” such as *watasi* ‘I,’ *anata* ‘you,’ *kare* ‘he,’ *kanozō* ‘she,’ etc., form an open class, and new additions to this class are always possible. For example, forms denoting the first, the second and the third person, singular include the following:

(1) Japanese personal nouns [Open class]

1<sup>st</sup> person (singular): *watakusi*, *watasi*, *boku*, *ore*, *wasi*, *oirā*, *ora*, *taku*, ...<sup>5</sup>

2<sup>nd</sup> person (singular): *anata*, *kimi*, *omae*, *omee*, *temee*, *anta*, *otaku*, ...

3<sup>rd</sup> person (singular): *kare*, *kanozō*, *ano hito*, *kono hito*, *sono hito*, *aitu*, ...

Even *yu* (from English ‘you’) and *mii* (from English ‘me’) can be used to refer to the addressee and the speaker, respectively.<sup>6</sup> Given the open class nature of these forms, they are probably better characterized as “nouns” rather than “pronouns.” Following Takubo (1997), I will refer to these as “personal nouns” rather than “personal pronouns.”

What is noteworthy about the behavior of Japanese personal nouns is that the 2<sup>nd</sup> person nouns listed in (1) cannot be freely used in conversational discourse.<sup>7</sup>

<sup>4</sup> See Sakuma (1936/1983) and Hoji (1990: Chapter 2) for a discussion of the basic character of pronouns in Japanese. See Hoji (1990: Chapter 2) for a discussion of the defining properties of the feature [+ pronominal] in syntactic terms.

<sup>5</sup> The plural of these nouns can generally be formed by adding either *-tati* or *-ra*. *Ora* and *taku* are usually used as a plural humble form of *watasi*, and therefore do not permit attachment of *-tati* or *-ra*. *Temae* is a humble form, taking only the humble plural form *-domo*, which can be attached to other 1<sup>st</sup> person nouns as well.

<sup>6</sup> My two sons at one point used *wan*, an Okinawan word meaning ‘I,’ to refer to themselves when they were in their early teens, a form they learned from a TV comic series that featured two boys from Okinawa.

<sup>7</sup> It has often been pointed out that the use of third person nouns in the presence of the person referred to can sometimes be considered rude in English as well as in Japanese (Kuno 1977 among others).

Unlike English, the use of second person nouns to refer to the addressee in Japanese is usually considered impolite and restricted only to individuals who are close to the speaker. In (2), for example, 2<sup>nd</sup> person nouns cannot be used in reference to one's teacher, traditionally a person to whom respect is to be accorded.

(2) Context: addressing a teacher.

??*Tanaka-sensei*, {*anata*, *kimi*, *otaku*} *no hon o yomimasi-ta*.  
 Tanaka-Prof. {you, you, you} GEN book ACC read.POL-PST  
 'Prof. Tanaka, I read your book.'

To address those in a higher position, those who are to be respected, or those who one is not on familiar terms with, expressions such as the following must be used instead of personal nouns.

(3) Definite descriptions:

- Family members: *otoo-san* 'father,' *okaa-san* 'mother,' *onii-tyan* 'brother,' *ozii-tyan* 'uncle,' *oba-tyan* 'aunt,' *ozii-tyan* 'grandfather,' *obaa-tyan* 'grandmother.'<sup>8</sup>
- Social positions or titles: *katyoo* 'section chief,' *butyoo* 'department head,' *senpai* 'senior, senior colleague,' *sensei* (pronounced [seNse:], used to address teachers and legislative assembly members), *syatyoo* 'company president,' *syotyoo* 'research institute director.'
- Others: *oku-sama*, *oku-san* '(addressee's) wife' (sometimes used to address a female guest), *danna*, *danna-sama*, *danna-san* '(addressee's) husband' (sometimes used to address a male guest), *syatyoo* 'company president' (sometimes used to address a male guest).
- Proper names with or without social titles.  
 Without social titles: *Tanaka*, *Tanaka-kun*, *Tanaka-san*, ...  
 With social titles: *Tanaka-katyoo* 'Section Chief Tanaka,' *Tanaka-kaityoo* 'Chairman Tanaka,' *Tanaka-kyoozyu* 'Professor Tanaka,' ...

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<sup>8</sup> *-tyan* is a diminutive counterpart of the honorific suffix *-san*. Terms for family kinship must be attached with diminutive or honorific suffixes to be used as forms of address. Some nouns denoting family relationships, such as *hahaoya* 'mother,' *haha* 'mother,' *titiyoa* 'father,' and *titi* 'father,' are not terms of address, cannot be used in a vocative sense, and do not function as second person referring expressions.

## 2.2 Definite descriptions versus personal nouns

Although definite descriptions and personal nouns can both be used to refer to discourse participants in Japanese, there are important differences between them. Personal nouns refer exclusively to the speaker (first person nouns), the addressee (second person nouns), or third persons (third person nouns), as do English personal pronouns, so that the referents of personal nouns vary depending on who is speaking to whom. For example, *boku* ‘I’ in (4a) refers to the speaker, who happens to be Yamada, while *boku* in (4b) refers to Tanaka, a different speaker. *Boku* in (5a) refers to the speaker Yamada and *kimi* ‘you’ in (5b) to the addressee, who also happens to be Yamada, illustrating how the referents of *boku* and *kimi* shift depending on who is speaking and whom that speaker is addressing, behaving just as do personal pronouns in English.

- (4) a. Yamada: *Boku ga matigat-tei-ta.* [boku = Yamada]  
           I       NOM be.wrong-STAT-PST  
           ‘I was wrong.’
- b. Tanaka: *Boku ga matigat-tei-ta.* [boku = Tanaka]
- (5) a. Yamada: *Boku ga matigat-tei-ta.* [boku = Yamada]
- b. Tanaka: *Kimi ga matigat-tei-ta.* [kimi = Yamada]  
           you    NOM be.wrong-STAT-PST  
           ‘You were wrong.’

Nouns of definite description, by contrast, invariably refer to the person denoted by the noun, regardless of who is speaking to whom: they refer to the speaker, the addressee, or a third person only when the person referred to by the noun happens to be the speaker, the addressee, or a third person under the kinds of conditions to be discussed below and in Section 2.3. Personal nouns are, in other words, inherently indexical in their lexical semantics, which dictates that their actual value be determined by the speech context. For example, the definite noun *otoo-san* in (6a) is used to refer to the speaker and in (6b) to the addressee, in both cases invariably referring to the father of Jiro. In (7a), *katyoo* ‘section chief’ is used to refer to the addressee Yamada and in (7c) also to Yamada, but in this case in a context where Yamada is not present, and thus as referring to a third person. *Katyoo* in both cases refers to the same Yamada, who is *katyoo* ‘section chief.’ (8) is a case where *Yamada* is used as a proper name, referring in (8a) to Yamada as addressee and in (8c) to Yamada as a third person. Here again, both cases refer to the same Yamada. As (7b) and (8b) show, neither *katyoo* nor *Yamada* can be used to refer to the speaker, unlike *otoo-san*, for reasons to be explained in 1.3.

- (6) a. Father: *Ziroo, otoo-san ga*  
                   Jiro father NOM  
                   *matigat-tei-ta yo.* [otoo-san = speaker]  
                   be.wrong-STAT-PST SFP  
                   ‘Jiro, I was wrong.’
- b. Jiro: *Sooda. Otoo-san ga*  
                   yes father NOM  
                   *matigat-tei-ta.* [otoo-san = addressee]  
                   be.wrong-STAT-PST  
                   ‘Yes, you were wrong.’
- (7) a. Tanaka: *Yamada-katyoo, katyoo wa*  
                   Yamada-chief section.chief TOP  
                   *matigat-tei-mas-u yo.*  
                   be.wrong-STAT-POL-NPST SFP  
                   ‘Mr. Yamada, you are wrong.’ [katyoo = Yamada = addressee]
- b. Yamada: *Sooda. {\*Katyoo/Watasi} ga matigat-tei-ru.*  
                   yes {section.chief/I} NOM be.wrong-STAT-NPST  
                   ‘Yes, I am wrong.’
- c. Nakata (in a context where Yamada is not present):  
                   *Sooda. Katyoo ga matigat-tei-ru.*  
                   yes section.chief NOM be.wrong-STAT-NPST  
                   ‘Yes, Mr. Yamada is wrong.’ [katyoo = Yamada = 3<sup>rd</sup> person]
- (8) a. Tanaka: *Yamada, Yamada wa*  
                   Yamada Yamada TOP  
                   *matigat-tei-ru yo.*  
                   be.wrong-STAT-NPST SFP  
                   ‘Yamada, you are wrong.’ [Yamada = addressee]
- b. Yamada: *Sooda. {\*Yamada/Ore} ga matigat-tei-ru.*  
                   yes {Yamada/I} NOM be.wrong-STAT-NPST  
                   ‘Yes, I am wrong.’
- c. Nakata (in a context where Yamada is not present):  
                   *Sooda. Yamada ga matigat-tei-ru.*  
                   yes Yamada NOM be.wrong-STAT-NPST  
                   ‘Yes, Yamada is wrong.’

(9) summarizes the differences observed above between personal nouns, on the one hand, and proper names and personal descriptions, on the other.

(9) Personal nouns:

- (a) are lexically specified to refer to the speaker or the hearer and derive their value (= reference) directly from the speech context;
- (b) involve indexical shift; and
- (c) in the 2nd person cannot be used to refer to people who are superior.

Proper names and definite descriptions:

- (a) derive their value from the description or the name denoted by the noun in question and are not lexically specified to refer to the speaker or the addressee, the roles of which are anaphorically assigned;
- (b) do not exhibit indexical shift; and
- (c) can be used to refer to superiors.

In the next section, I will explain the mechanisms that enable nouns of definite description to refer to the speaker or the addressee.

## 2.3 Proper names and definite descriptions used to denote first person

In Takubo (1997), I argue that definite descriptions referring to first person are possible under conditions that differ from those referring to second person.

A subgroup of proper names and nouns of definite description can be used to refer to the speaker in a narrowly restricted context, namely that of talking to small children in a parental way. This is typically possible only with certain kinship terms, with the single exception of *sensei* ‘teacher,’ which can be used in this way when speaking to school children in an elementary school context. I argue in Takubo (1997), based on the work of Suzuki (1971, 1972, 1973) and Kuno (1977), that, as seen earlier in (4), such first person use of kinship terms and proper nouns involves the elimination of perspective or indexical shift that is a property of personal nouns like *boku* ‘I’ or *watashi* ‘I.’

It is commonly accepted that the kind of indexical shift involved in the use of personal nouns is difficult for small children to acquire and consequently that the use of personal nouns is attested relatively late in the linguistic development of children acquiring Japanese (see Clancy 1985). Using kinship terms as if they were proper names effectively eliminates such indexical shift, making it possible for small children to avoid having to use personal nouns. Kinship terms used in this way can be

considered to be proper names for members of the family, made possible by naming all members of the family from the point of view of the youngest member.<sup>9</sup> The father can thus be referred to by one of the various address terms for father used in the family such as *otoo-san*, *papa*, *too-tyan*, etc., and the mother, similarly, by one of the various address terms for mother such as *okaa-san*, *mama*, *kaa-tyan* etc., not only by the youngest children, but by all members of the family, including even grandfathers and grandmothers. In such a system, the youngest can be called by their own name without any risk of confusion because they are the only ones who are called by name or call themselves by name.<sup>10</sup>

Suzuki (1971) observed that the first and second person use of kinship terms is restricted to cases where the person referred to is superior to their interlocutor in terms of seniority and/or generation in the family tree. Taking, for example, Taro to be the speaker, Taro's father, mother, grandmothers, grandfathers, uncles, and aunts are situated higher in the family tree than Taro, and his elder siblings and younger siblings, if any, are respectively superior or inferior to him in age. Suzuki (ibid.) found that only kinship terms that denote the speaker's superiors can be used as address terms, such as *otoo-san* 'father,' *onii-san* 'big brother,' *obaa-tyan* 'Grandma,' or *ozu-tyan* 'uncle,' but not kinship terms for inferiors such as *otooto* 'little brother,' *imooto* 'little sister,' or *itoko* 'cousin,' even if these are attached with diminutives such as *-tyan*.<sup>11</sup> To address one's inferiors, proper names or nicknames with or without diminutive suffixes must be used. This way of adopting the viewpoint of the smallest child can be extended even to speech with small children not related to the speaker. It is thus possible for a woman to use *oba-san* 'aunt' or *oba-tyan* 'Auntie' in addressing even children who are not her relatives. The same is true of *ozu-san* 'uncle,' *onii-san* 'elder brother,' and *onee-san* 'elder sister.' The choice is made according to how speakers prefer to identify themselves in terms of a fictional relationship with the children they are addressing.

Since such kinship address terms are used to refer to the speaker when talking to junior members of the family, they become associated with a patronizing tone of

<sup>9</sup> Suzuki (1972: 432) calls the phenomenon 'empathetic identification' with the smallest child in the family.

<sup>10</sup> Personal nouns like *boku* ('I' used by a male) or *watashi* ('I' used by a female) would accordingly be predicted not to be used by small children. This is borne out in the case of *watashi*, which does not appear until the age of four or later in Japanese children according to Clancy (1985). *Boku*, however, is observed to appear at age two (Clancy ibid.). This is related to the fact that *boku* can be used as an address term in parental style speech, but *watashi* cannot.

<sup>11</sup> Diminutive suffixes such as *-tyan* cannot be attached to these kinship terms: *otooto-tyan* 'younger brother,' *imooto-tyan* 'younger sister,' and *itoko-tyan* 'cousin' are thus impossible, in contrast to *onii-tyan* 'elder brother' and *onee-tyan* 'elder sister.' The suffix *-san* can be attached to these to become *otooto-san*, *imooto-san*, etc., but in such cases it functions as an honorific suffix, and kinship terms with this suffix cannot be used as terms of address, referring instead to the younger brother or younger sister of the addressee or of someone else.

speech. *Sensei* can exceptionally be used for self-reference but only when talking to small school children. It would sound patronizing and, therefore inappropriate, to use *sensei* for self-reference in a context such as (10), where Yamada is a high school student.

- (10) Mr. Wada: *Yamada-kun, getuyoo made-ni syukudai o*  
 Yamada-Mr. Monday by homework ACC  
*{boku/#sensei} ni teisyutu-si-te kudasai.*  
*{I/SENSEI} DAT submit-do-GER please*  
 ‘Mr. Yamada, please submit your homework to me by Monday.’

It is, similarly, impossible to use social titles such as *katyoo* for self-reference because of the implication thereby conveyed that the addressee is not yet mature enough to be able to comprehend indexical shift.

- (11) Mr. Yamada: *Tanaka-kun, sore o {watasi/\*katyoo} ni*  
 Tanaka-Mr. that ACC {I/KATYOO} DAT  
*kure-na-i ka.*  
 give.me-NEG-NPST Q  
 ‘Mr. Tanaka, please give that to me.’

## 2.4 Proper names and definite descriptions used to denote second person

As observed in 2.2, definite expressions and proper names can be used to refer to the addressee. An important point to note here is how Japanese differs in this respect from English. In English, while such expressions can be used as vocatives or forms of address as in Japanese, in clause-internal grammatical positions such as subject, object, or dative, only personal pronouns can be used to refer back to the vocative nominals, as illustrated in (12). In Japanese, by contrast, the repetition in clause-internal position of an address term used as a vocative is quite natural, as illustrated in (13).<sup>12</sup>

<sup>12</sup> Notice that it is rude to use personal nouns to refer to an addressee who is to be accorded respect. The use of *anata* in (13a, b), therefore, would be inappropriate unless the speaker is intentionally behaving rudely or putting distance between him/herself and the addressee. In (13c), by contrast, it is acceptable to use *kimi* or some other appropriate second person noun because the addressee is an equal to the speaker.



- (12) a. *Mr. Tanaka, I give this to {you/\*Mr. Tanaka}.*  
 b. *Mother, I give this to you.*  
 c. *John, I give this to you.*
- (13) a. *Tanaka-sensei, {#anata/Tanaka-sensei/sensei}no hon o yom-imasi-ta.*  
 Tanaka-Prof. {you/Tanaka-Prof./Prof.} GEN book ACC read-POL-PST  
 ‘Prof. Tanaka, I read your book.’  
 b. *Okaa-san, kore {#anata/okaa-san} ni age-ru.*  
 Mother this {you/mother} DAT give-NPST  
 ‘Mother, I give this to you.’  
 c. *Taroo-tyan, kore {kimi/Taroo-tyan} ni age-ru.*  
 Taro-DIM this {you/Taro-DIM} DAT give-NPST  
 ‘Taro, I give this to you.’

In Japanese, where definite descriptions can be used as vocatives, they can also be used in referring to the addressee in clause-internal grammatical positions. The use of vocatives is in fact optional in cases where definite descriptions used to refer to the addressee appear clause internally. In (13), for example, the vocatives can be omitted without any effect on the acceptability of using the definite description in genitive or dative position. This use of definite descriptions to refer to the second person is not subject to the kind of constraints on first person use of kinship terms or the use of *sensei* ‘teacher,’ which are only possible when a parental or similar relationship exists between the speaker and the addressee.

It is interesting to notice that definite descriptions denoting one’s non-superiors, i.e. one’s equals or inferiors, cannot be used as address terms (see Suzuki 1971, 1972, 1973, Kuno 1977, and Takubo 1997), as illustrated in (14). This is related to the observation in Takubo (ibid.) that definite descriptions may serve as vocatives only when they are honorific in function. Neither *otooto* nor *itoko* can therefore be used as vocatives in (14).<sup>13</sup> Proper names, by contrast, with or without social titles can be used as address terms without regard for seniority or superiority. Therefore, in addressing one’s subordinates or younger or equal members of one’s family, proper names or nicknames must be used as vocatives rather than kinship terms, as shown in (15).

- (14) a. Context: Ichiro speaking to his younger brother Jiro.  
*\*Ootoo, kore {omae/otooto} ni yar-u.*  
 little.brother this {you/OTOOTO} DAT give-NPST  
 ‘Brother, I give this to you.’

<sup>13</sup> Non-superior address terms can, however, be used as vocatives if an overt vocative marker such as *yo* is attached.

- b. Context: Ichiro speaking to his cousin Jiro.  
*\*Itoko, kore {omae/itoko} ni yar-u.*  
 cousin this {you/ITOKO} DAT give-NPST  
 ‘Cousin, I give this to you.’
- (15) a. Context: Ichiro speaking to his younger brother Taro.  
*Taroo-tyan, kore {omae/Taro-tyan} ni age-ru.*  
 Taro-DIM this {you/Taro-DIM} DAT give-NPST  
 ‘Taro, I give this to you.’
- b. Context: Ichiro speaking to his cousin Jiro.  
*Ziroo-tyan, kore {omae/Ziroo-tyan} ni age-ru.*  
 Jiro-DIM this {you/Jiro-DIM} DAT give-NPST  
 ‘Jiro, I give this to you.’

### 3 Demonstratives

Demonstratives have probably been one of the most widely discussed topics in Japanese linguistics.<sup>14</sup> In contrast to the personal noun system, which forms an open class, the demonstrative system of Japanese forms a closed class to which no new members can be added.

#### 3.1 Spatial characterization

Japanese demonstratives have traditionally been characterized as a tripartite system expressed by three prefixes *ko-*, *so-*, and *a-*, to which are attached suffixes representing various categories of meaning, as in Table 1.

**Table 1:** The tripartite demonstrative system of Japanese

|             |         | <i>ko-</i>   | <i>so-</i>   | <i>a-</i>                  |
|-------------|---------|--------------|--------------|----------------------------|
| <i>-no</i>  | GEN     | <i>kono</i>  | <i>sono</i>  | <i>ano</i>                 |
| <i>-re</i>  | ‘thing’ | <i>kore</i>  | <i>sore</i>  | <i>are</i>                 |
| <i>-ko</i>  | ‘place’ | <i>koko</i>  | <i>soko</i>  | <i>asoko</i> <sup>15</sup> |
| <i>-itu</i> | ‘guy’   | <i>koitu</i> | <i>soitu</i> | <i>aitu</i>                |

<sup>14</sup> See Kinsui and Takubo (eds.) (1992) for a history of research on Japanese demonstratives and a list of major works on Japanese demonstratives and Imai (2018) for a general introduction to demonstratives in Japanese from a contrastive perspective.

<sup>15</sup> The *so* in *asoko* has nothing to do with *so-* in the *so*-series.

There have been two primary approaches taken to the linguistic analysis of Japanese demonstratives. One approach is based on physical or psychological distance from the speaker or hearer, an approach that we will call the “personal” approach. Under this approach, the demonstrative system of Japanese is characterized as in (16).

- (16) a. *Ko*-series: refers to an object near the speaker  
 b. *So*-series: refers to an object near the hearer  
 c. *A*-series: refers to an object distant from both the speaker and the hearer.

Japanese demonstratives can also be used to refer to objects not in the deictic (or in this case “visible”) domain, in which case they can no longer be characterized in terms of distance from the speaker or hearer. The use of demonstratives in such cases has traditionally been seen to correlate with “shared” versus “unshared” knowledge. Matsushita (1930/1978: 234) was probably the first to introduce this concept in characterizing the *a*-series demonstratives.

Distal refers to something in the distance, but the object referred to is restricted to something that is known both to the speaker and the hearer. If either the speaker or the hearer does not know the object, it cannot be referred to using distal demonstratives. It must be referred to using either the first proximal or the second proximal demonstrative, as if it were an object brought in front of the speaker or the hearer.<sup>16</sup>

(Matsushita 1930/1978: 234, translation by present author)

Matsushita, therefore, can be understood to have added the concept of shared knowledge to the concept of distance from speaker or hearer in describing Japanese demonstratives, as in (17).

- (17) a. *Ko*-series: refers to an object near the speaker  
 b. *So*-series: refers to an object near the hearer  
 c. *A*-series: refers to an object distant from both the speaker and the hearer. Objects referred to by the *a*-series must be known to both the speaker and the hearer.

Matsushita introduces the concept of “known to both the speaker and the hearer” as no more than a constraint on the *a*-series, saying that “even if the object is far from both the speaker and the hearer, the *a*-series cannot be used if the object is not known to both the speaker and the hearer.” By simply adding the “shared knowledge”

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<sup>16</sup> The first proximal is the *ko*-series and the second proximal is the *so*-series in Matsushita’s terminology.

clause to (16c) but leaving the rest of the description in (16) unchanged, as in (17), he left it unclear how the clause concerning “shared knowledge” applies to the *ko*- and *so*-series.

This problem in Matsushita’s characterization can be solved by introducing a distinction between “visible” and “non-visible” in the description of Japanese demonstratives, a distinction first proposed by Kuno (1973). Kuno adopts (16) for the characterization of the deictic, “visible” uses of demonstratives, but posits a “non-visible” use distinct from this, calling it an “anaphoric” use that he characterizes as in (18).

- (18) Kuno’s (1973: 290) characterization of the anaphoric use of *so*-NPs and *a*-NPs (slightly adapted):
- a. *So*-NPs are used for referring to something that is not known personally to either the speaker or the hearer or has not been a shared experience between them.
  - b. *A*-NPs are used for referring to something (at a distance either in time or space) that the speaker knows both s/he and the hearer know personally or have experience with.<sup>17</sup>

In this way, Kuno (1973) characterizes the anaphoric uses of *so/a*-NPs in terms of the speaker/hearer’s knowledge of the object referred to by a demonstrative. Note that this characterization of the non-visible uses of *so/a*-NPs cannot be related to the standard characterization of their visible uses given in (16), as pointed out by Kuroda (1979: 92–93) and further discussed in Takubo and Kinsui (1996a: 68). That is, with Kuno, the concept *proximal* or *distal* is defined in terms of distance from the speaker or hearer and applies only to the visible uses of demonstratives and not to their anaphoric uses, which he characterizes in terms of knowledge of the referent on the part of the speaker/addressee. Kuno thus succeeds in avoiding the problem that Matsushita faces by drawing a distinction between visible and anaphoric uses.<sup>18</sup> (19) and (20) are examples of the anaphoric uses of demonstratives given by Kuno.

<sup>17</sup> The descriptive statements in (18) are not totally unlike that of Matsushita (1930/1978: 234) given in (i).

(i) The speaker assumes that the hearer is acquainted with the referent identified by an *a*-NP; otherwise a *so*-NP or a *ko*-NP must be used. (Translation by present author)

Matsushita’s description in (i) is intended to cover both deictic and non-deictic uses of Japanese demonstratives. Kuno (1973), however, argues that (i) is applicable only to non-visible or ‘anaphoric’ uses of demonstratives.

<sup>18</sup> Kuno (1973) does not cite Matsushita (1930).

- (19) *Kinoo, Yamada-san ni hazimete a-imasi-ta. {A/\*so}-no*  
 yesterday Yamada-Mr. DAT first.time meet-POL-PST {A /SO}-GEN  
*hito, zuibun kawatta hito des-u ne.*  
 person very eccentric person COP.POL-NPST SFP  
 ‘I met Mr. Yamada for the first time yesterday. That man is a very strange  
 person, isn’t he?’ (Kuno 1973: 283 (5)A)
- (20) *Kinoo Yamada-toiu hito ni a-imasi-ta. {\*A/so}-no*  
 yesterday Yamada-be.called person DAT meet-POL-PST {A /SO}-GEN  
*hito, miti ni mayot-te komat-tei-ta node*  
 person way DAT get.lost-GER get.in.trouble-RES-PST so  
*tasuke-te age-masi-ta.*  
 help-GER give-POL-PST  
 ‘Yesterday, I met a man by the name of Yamada. He had gotten lost and was  
 having difficulty, so I helped him.’ (Kuno 1973: 284 (6)A-1)

In (19) and (20), the speaker uses *a-* because he “knows Yamada well” and assumes that the addressee does so too, in which case *so-* would be inappropriate. In (20), on the other hand, *sono hito* rather than *ano hito* is appropriate because the speaker assumes that the hearer does not know Yamada. The hearer comes to have knowledge of the person named *Yamada* as someone whom the speaker helped when lost, but this knowledge belongs to the realm of hearsay. The hearer must therefore use *sono hito* in referring to this person because he has not yet identified the person as Mr. Yamada, whom he in fact knows personally as a middle-aged person with a beard. Only after confirming that the person in question is indeed the Mr. Yamada that he already knows can he then refer to him using either *sono hito* or *ano hito*, as in (21).

- (21) *{A/so}-no hito nara, watasi mo*  
 {A/SO}-GEN person be.COND I also  
*sit-tei-mas-u yo. Watasi mo {ano/so}-no*  
 come.to.know-RES-POL-NPST SFP I too {A/SO}-GEN  
*hito o tasuke-te ag-eta koto-ga-ari-mas-u.*  
 person ACC help-GER give-PST have.experience.of-POL-NPST  
 ‘I know him, too. I have helped that man, too.’

According to Kuno, “knows very well” concerns direct knowledge and even if the addressee did know Mr. Yamada beforehand “this shows that indirect acquaintance with someone through hearsay does not constitute ‘formally knowing him’” (Kuno 1973: 285).

As for the *ko*-series Kuno (ibid.) says “the *ko*-series can be used for indicating something as if it were visible to both the speaker and the hearer at the time of the

conversation, and thus it imparts vividness to the conversation (Kuno *ibid.*: 288).” As an example of this he gives (22A).

- (22) A: *Boku no tomodati ni Yamada toiu hito ga*  
 I GEN friend DAT Yamada be.called person NOM  
*i-ru n da ga, kono otoko wa nakanaka*  
 exist-NPST NMLZ COP.NPST but this man TOP considerable  
*no rironka de, ...*  
 GEN theoretician COP.GER  
 ‘I have a friend by the name of Yamada. This man is quite a theoretician,  
 and ...’ (Kuno *ibid.*: 288 (15))
- B: *Aa, {a/so/\*ko}-no hito nara boku mo yoku*  
 Oh, {A/SO/KO}-GEN person be.COND I also well  
*sit-tei-mas-u yo.*  
 come.to.know-RES-POL-NPST SFP  
 ‘Ah, if it’s that man, I know him well.’  
*{A/\*so/\*ko}-no hito wa zuibun gironzuki des-u*  
 {A/SO/KO}-GEN person TOP very argumentative COP.POL-NPST  
*ne.*  
 SFP  
 ‘That man likes very much to argue, doesn’t he?’ (Kuno *ibid.*: 289: (16))

Kuno further cites (22B) as a response to (22A), saying that *sono* in (22B) is “probably not anaphoric but demonstrative” and “it seems that Speaker B, in response to Speaker A’s reference to Yamada as if he were present at his side, now refers to him as a person who is at A’s side (is closer to A than to B).” Notice that *kono hito* cannot be used in (22B). This is because, according to Kuno, “an object that is not visible but is referred to by the *ko*-series semi-demonstratively cannot be tossed around between the speaker and the hearer.” (Kuno *ibid.*: 289)

Kuno’s approach successfully distinguishes the spatial characterization involved in visible uses from non-visible uses, thereby providing a solution to the problems that Matsushita’s approach faced. This approach, however, itself suffers from several shortcomings, as pointed out in Kuroda (1979) and Takubo and Kinsui (1997).

First, Kuno’s characterization must treat the visible uses and anaphoric uses of demonstratives as unrelated to each other. The choice between demonstratives in the visible uses is based on the distance of an object either from the speaker or from the addressee, and that in the anaphoric uses on the knowledge of the speaker or the addressee. As will be discussed in detail in Section 3.2, the two uses in Kuno’s framework are not in a straightforward relationship where one can be mapped onto the other by extension or modification.

Second, in the case of dialogic discourse, for the knowledge of an object  $x$  to be mutually shared, it is not enough that the speaker knows that both the speaker and the addressee know  $x$ . It is furthermore necessary that the speaker knows that the addressee knows that the speaker knows  $x$ . It is well known that assuming this type of mutual knowledge will lead to infinite regress (See Clark and Marshall 1981 and also Yoshimoto 1986).<sup>19</sup>

In the next section I will introduce Kuroda's (1979) semantic approach to demonstratives, which avoids these two problems.

### 3.2 Kuroda's (1979) semantic approach

Kuroda (1979) proposes a solution to the problems encountered in the approaches discussed so far by accounting for Japanese demonstratives in semantic terms. In most approaches prior to Kuroda, crucial reference had been made to the distance from, or the knowledge of, the speaker or the addressee. According to Kuroda, providing an account relying on notions such as "speaker" and "addressee," which are elements of the speech context, is one that belongs to the realm of pragmatics, i. e. the relationship between reference and context. He proposes, instead, a semantic characterization of demonstratives.

Kuroda accepts Kuno's distinction between anaphoric and visible uses, criticizing Mikami (1970), who argues for an integrated treatment of  $\alpha$ -series demonstratives as follows:

*Are seems to be always deictic and to serve the same function in both visible and anaphoric uses. It would suffice to say that it refers to an object or event (temporally and spatially) distant both from the speaker and from the addressee.*

(Mikami 1970: 37, translation by present author)

Kuroda (1979: Section 2) argues that this cannot account for properties of the anaphoric use of these forms that were noted by Kuno. The problem is that anaphoric uses are not in a one to one mapping relation with the visible uses defined in terms of distance.

To show why this is so, let us suppose that there is a mapping relation between proximity and familiarity: proximal is mapped onto familiar and distal is mapped onto unfamiliar. The mapping relations and the demonstratives to be expected under this assumption can be outlined as in Table 2.

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<sup>19</sup> Takubo and Kinsui (1997) attempts to avoid the problem of infinite regress by assuming that  $\alpha$ -series demonstratives are to be used in those cases where the speaker and the addressee have direct experience involving  $x$ .

**Table 2:** Possible mapping relations between visible and non-visible uses of demonstratives

|   |                      | Speaker              | Addressee            | demonstratives<br>actually used |
|---|----------------------|----------------------|----------------------|---------------------------------|
| A | Anaphoric<br>Visible | unfamiliar<br>distal | familiar<br>proximal | <i>so-</i><br><i>so-</i>        |
| B | Anaphoric<br>Visible | unfamiliar<br>distal | unfamiliar<br>distal | <i>so-</i><br><i>a-</i>         |
| C | Anaphoric<br>Visible | familiar<br>proximal | unfamiliar<br>distal | <i>so-</i><br><i>ko-</i>        |
| D | Anaphoric<br>Visible | familiar<br>proximal | familiar<br>proximal | <i>a-</i><br><i>ko-</i>         |

A is the case where the speaker does not know an object and the addressee knows it, which can be mapped, in terms of distance, onto visible uses where the object is distant from the speaker and proximal to the addressee. This is a case where distance and familiarity match, i.e. the same demonstrative *so-* is used in both anaphoric and visible cases. In Kuno's characterization, if an object is not known either to the speaker or to the addressee, *so-* must be used. But in all the other three cases distance and familiarity do not match. For example, in B, where *unfamiliarity* is mapped onto *distal*, the demonstrative to be used in anaphoric uses is *so-*, not *a-*, but in the visible uses *a-* must be used, showing that *distal* cannot be identified with *unfamiliar* in this case, contradicting Mikami (1970). In case C, if the speaker knows an object and the addressee does not know it, *so-* must be used according to Kuno, but if *familiarity* is mapped onto *proximal* and *unfamiliarity* onto *distal*, the demonstrative that would be used to refer to an object proximal to the speaker and distal to the addressee in the visible use is *ko-* rather than *so-*. D directly contradicts Mikami's claim that the *a*-series is distal in both deictic (= visible) and anaphoric uses. *Proximity* and *familiarity* cannot, therefore, be equated in the use of demonstratives, providing support for Kuno's distinct treatment of the one use from the other in (18).

Kuroda (1979) proposes a semantic approach that both provides a solution to this problem and treats the visible and non-visible uses of Japanese demonstratives in a unified fashion. He first redefines the terms to be used in the characterization of demonstratives, proposing to characterize Kuno's "visible use" as instead an "independent use," defined as in (23).<sup>20</sup>

<sup>20</sup> Kuroda's paper is written in Japanese and he cites the Japanese version of Kuno's chapter on demonstratives, where Kuno uses *bunmyaku sizi*, which literally means 'contextual.' Kuroda changes this to *syooooteki* 'anaphoric' uses, a more transparent term than *bunmyaku sizi*.



- (23) In their anaphoric use, demonstratives refer to other expressions in the preceding context.

In their independent use, demonstratives refer directly to an object without anaphorically depending on another expression in the discourse.

(Summarized from Kuroda (1979: 91)

Kuroda's anaphoric use and independent use correspond roughly to Kuno's anaphoric use and visible use, respectively, but do not necessarily overlap completely, because by Kuroda's definitions, non-visible expressions are not necessarily anaphoric.

Kuroda takes as the methodological starting point of his discussion demonstratives as used in soliloquies, saying the following:

"Speaker" and "addressee" are concepts relevant to language use, and given that these concepts are crucially involved in the determination of the semantics of demonstratives, we must return to the foundation of language use, and take this foundation into consideration very carefully in studying the characteristics of demonstratives (Kuroda 1979: 93).<sup>21</sup>

His choice of soliloquies as the initial target of his study is motivated by the fact that "in a soliloquy, the addressee disappears, with only the speaker remaining as a concrete entity," (Kuroda 1979: 94). In order to discount the possibility of a soliloquy becoming a pseudo-soliloquy where the speaker talks to his split self or alter ego, Kuroda chooses sentences ending in expressions of self-doubt such as ... *daroo ka* 'I wonder if ...' In section 5 of his paper, Kuroda observes the use of demonstratives in such soliloquies lacking any addressee whatsoever, and proposes (24) as an initial characterization of the behavior of demonstratives in such contexts, essentially a version of (16) and (18), with reference to the hearer omitted.<sup>22</sup>

- (24) The use of demonstratives in soliloquies (summarized from Kuroda 1979: 95)
- a. Anaphoric use: the *a*-series is used for referring to something that is known, and the *so*-series for referring to something that is not known personally to the speaker.
  - b. Independent use: the *a*-series is used for referring to something distant from the speaker.

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<sup>21</sup> The translations of the quotations and examples from Kuroda (1979) are provided by the present author, unless noted otherwise.

<sup>22</sup> Kuroda does not refer to *ko*- here.

In visible situations, (24) seems to be a valid description. Significantly, however, Kuroda additionally considers the possibility of a non-visible, independent use of demonstratives. Although this would be impossible in Kuno's framework, it is a possibility in Kuroda's framework, where visibility and anaphoricity are independent from each other (Kuroda *ibid.*: 95–97).<sup>23</sup> This use is illustrated in examples (25)–(27).

(25) Tumor sentence

Context: An ulcer has been found in the stomach of the speaker in a comprehensive medical examination. Although the speaker understands rationally that s/he has an ulcer, because the doctor has told her/him, s/he has not actually seen or felt it. When s/he wakes up one morning, the thought of the ulcer comes to mind. S/he wonders:

*Ittai sore wa donna iro o si-tei-ru no*  
on-earth SORE TOP what.kind.of color ACC do-STAT-NPST NMLZ  
*daroo ka.*  
TENT Q  
'I wonder what on earth color **it** is.'

(26) Galois sentence

Context: A friend of the speaker, who was prematurely killed in a duel, was said to be developing a theory of equations at the time of his death. The speaker does not know the actual content of the theory. He wonders to himself:

*Mosi semete sore no gaiyoo ga happyoo*  
if at.least SORE GEN general.outline NOM publish  
*sare-tei-tara gakkai no zyookyoo wa*  
do.PASS-STAT-COND academic.world GEN situation TOP  
*ippen si-tei-ta no dewa-na-i daroo ka.*  
change.completely do-STAT-PST NMLZ COP-NEG-NPST TENT Q  
'If at least a general outline of **it** had been published, the state of the academic world would be completely different.'

<sup>23</sup> Acceptability judgments for examples (25)–(27) differ among speakers. Hoji et al. (2003) discuss these examples in an appendix and judge them as extremely low in acceptability or even unacceptable. Hoji (personal communication: September 15, 2019) observes that for him if *sore* in (26) is replaced by *sono riron* (that theory), a more strongly individual denoting expression, the sentence becomes completely unacceptable.

## (27) Essay sentence

Context: The speaker has been asked to write an essay on something and is wondering whether to accept the request. A thought occurs in his mind, but he is not sure what it is and wonders to himself:

*Un, maa sono koto demo kai-te mi-yoo ka.*

FL FL SONO thing even write-GER see-VOL Q

‘Well, shall I write about **that**?’

*So-* used in (25)–(27) does not require any linguistic antecedent in the preceding context. If there has been some sort of direct experience of an object, an *a-* or *ko-* series demonstrative could be used to refer to it. Kuroda maintains, however, that in the contexts of (25) through (27), *so-* is possible even if there is no linguistic antecedent, that is, in an independent, non-visible context. What regulates the use of this independent, non-visible use of *so-* and *a-* in soliloquies is whether the object in question is known well to the speaker or not, namely an object fulfilling the conditions Kuno proposed for the use of *so-* and *a-* in their anaphoric use (see (18)). In section 6 of his paper, Kuroda redefines “is known well” as in (28) (summarized from Kuroda 1979: 98).

- (28) a. The direct knowledge involved in *a*-series demonstratives is “knowledge through direct experience” and is such that the cognitive agent has unlimited knowledge about the object of knowledge.
- b. The indirect knowledge involved in *so*-series demonstratives is conceptual knowledge and is limited to the concept itself.

Kuroda applies the generalizations obtained in this way through his *Gedanken* experiments on the independent use of demonstratives in soliloquy contexts, *mutatis mutandis*, to their anaphoric use in soliloquy contexts, and then ultimately extends these generalizations to dialogue contexts. In dialogues, according to him, the *a*-series demonstratives can be characterized as in (29) (summarized from Kuroda 1979: 99).

- (29) *A*-series used in dialogues: The object referred to is shared as direct knowledge of both the speaker and addressee.

In (30a), for example, the speaker, in referring to Yamada as *ano hito*, assumes that both he and the addressee know Yamada personally. He further “understands that the addressee has direct knowledge about Yamada so that he need not be shown the speaker’s grounds in conceptual terms (i.e. in words) for the inference that Yamada will be late.” (Kuroda 1979: 99). “[30b)], lacking that sort of understanding on the part of the speaker, is inappropriate because the grounds for the inference are not

explicitly given. The speaker either has to make conceptually explicit the grounds for the inference, e. g. ‘because he is sloppy when it comes to time.’ or has to (has no other way but to) simply assert the information as in [(30c)].” (Kuroda *ibid.*: 99).

- (30) a. *Yamada-san o mat-tei-ru no des-u.*  
 Yamada-Mr ACC wait.for-PROG-NPST NMLZ COP.POL-NPST  
**Ano hito no koto da-kara kitto**  
 ANO person GEN matter COP.NPST-because certainly  
*okure-te ku-ru desyoo.*  
 get.late-GER come-NPST TENT.POL  
 ‘I’m waiting for Mr. Yamada. Knowing **him**, I’m sure that he’ll be late.’
- b. ??*Yamada-san toiu hito o mat-tei-ru no*  
 Yamada-Mr be.called person ACC wait.for-PROG-NPST NMLZ  
*des-u. Sono hito no koto da-kara*  
 COP.POL-NPST SONO person GEN matter COP.NPST-because  
*kitto okure-te ku-ru desyoo.*<sup>24</sup>  
 certainly get.late-GER come-NPST TENT.POL  
 ‘I’m waiting for a person called Mr. Yamada. Knowing **him**, I’m sure that he’ll be late.’
- c. *Yamada-san toiu hito o mat-tei-ru no*  
 Yamada-Mr be.called person ACC wait.for-PROG-NPST NMLZ  
*des-u. Sono hito wa kitto okure-te*  
 COP.POL-NPST SONO person TOP certainly get.late-GER  
*ku-ru desyoo.*  
 come-NPST TENT.POL  
 ‘I’m waiting for a person called Mr. Yamada. I’m certain that **he** will be late.’

Based on his observations regarding (30), Kuroda argues that (31) holds for *so*-series demonstratives used in dialogues.

- (31) When the speaker does not know the object referred to very well, s/he knows it only conceptually. *So*-NPs must be used to refer to the object in such cases (summarized from Kuroda 1979: 99–100).

In (32), since the quote marker *toiu* ‘be called’ is used, we know that the speaker does not know the professor named “Yamada Taroo” personally and has only the concep-

<sup>24</sup> ?? indicates that the sentence so marked sounds unnatural but may not be totally unacceptable, the number of ?’s indicating the degree of unnaturalness.

tual knowledge that he is named “Yamada Taroo” and that the addressee studied under him in Osaka. The speaker, therefore, must refer to him as *sono sensei* to reflect the fact that the knowledge in this case is conceptual (Kuroda 1979: 100).<sup>25</sup>

- (32) *Kimi wa Oosaka de Yamada Taroo toiu sensei*  
 you TOP Osaka LOC Yamada Taro be.called professor  
*ni osowat-ta sooda-kedo, sono sensei wa koogi ga*  
 DAT learn-PST EVID-but SONO professor TOP lecture NOM  
*zyoozu kai.*  
 be.good.at Q  
 ‘I hear that while in Osaka you studied under a professor called Taro Yamada.  
 Is **he** good at giving lectures?’

The same applies to a soliloquy such as in (33).

- (33) Soliloquy  
*Tanaka wa Oosaka de Yamada Taroo toiu sensei ni*  
 Tanaka TOP Osaka LOC Yamada Taro be.called professor DAT  
*osowat-ta sooda-kedo, sono sensei wa koogi ga*  
 learn-PST EVID-but SONO teacher TOP lecture NOM  
*zyoozu-na no daroo ka.*  
 be.good.at-COP NMLZ TENT Q  
 ‘I hear that while in Osaka Tanaka studied under a professor called Taroo  
 Yamada. I wonder if **he** is good at giving lectures.’

In cases where the speaker knows well, but the addressee does not know well, the object in question, the parallelism between dialogue and soliloquy no longer holds. (34) is a case where the speaker has directly experienced the object (the fire) and assumes that the addressee does not have similar experience of it. In this case, the speaker must refer to the fire as *sono kazi* ‘that fire.’ The speaker knows the fire through direct experience, but the addressee’s knowledge of the fire can only be conceptual, as ‘a fire in Kanda last week,’ a fact that the speaker knows. The speaker, therefore, must appeal to a common knowledge base with the addressee in referring to the fire using *sono kazi* ‘that fire,’ as an object characterized by the concept ‘a fire in Kanda last week’ (Kuroda *ibid.*: 100).

<sup>25</sup> If *ano sensei* is used instead of *sono sensei* in (32) and (33), the sentences become unacceptable unless *Yamada Taroo toiu sensei* is changed to *Yamada Taroo* to mark that the speaker has direct knowledge of Professor Yamada. See Takubo and Kinsui (1997) for relevant discussion.

- (34) Context: the speaker witnessed a fire and knows about it from direct experience but assumes that the addressee does not.

Speaker: *Sensyuu kanda de kazi ga ar-imasi-ta. Sono*  
 last.week Kanda LOC fire NOM be-POL-PST SONO  
*kazi de gakusei ga hutari sin-imasi-ta.*  
 fire CAUS student NOM two die-POL-PST

‘There was a fire in Kanda last week. Two students died in that fire.’

Addressee: *Sono kazi no koto wa sinbun de yom-imasi-ta.*  
 SONO fire GEN matter TOP newspaper INS read-POL-PST  
 ‘I read about that fire in the paper.’

The speaker, however, must use an *a*-series demonstrative to refer to the same fire in a soliloquy such as (35) (Kuroda *ibid.*: 100).

- (35) Soliloquy

*Sensyuu Kanda de kazi ga at-ta ga, ano kazi de*  
 last.week Kanda LOC fire NOM be-PST but ANO fire CAUS  
*gakusei ga hutari sin-da no ka.*  
 student NOM two die-PST NMLZ Q

‘There was a fire in Kanda last week. Two students died in that fire, did they.’

“By contrast, in a soliloquy the speaker does not have to condescend to the level of the addressee, so s/he can refer to the fire using *ano kazi*, as an object that has not been conceptualized (Kuroda *ibid.*: 100).” It is, therefore, not enough to say that a *so*-series demonstrative is used when the addressee does not know the object well, as in Kuno’s framework. That would be no more than a mere description of the phenomenon without providing an explanatory account for why the *so*-series is used when the speaker knows the object very well and the addressee does not. An account can, however, be given of this phenomenon by saying that *so*-series demonstratives function to express conceptual knowledge.

Kuroda’s account so far is not significantly different from that given by Kuno in terms of the empirical predications it makes. Kuroda, however, points out an important set of empirical data that cannot be accounted for in Kuno’s framework in (18) (Kuroda *ibid.*: 101). Example (36) is one such case.

- (36) *Kyoo kanda de kazi ga at-ta yo. {A/\*so}-no kazi*  
 today Kanda LOC fire NOM be-PST SFP {A/SO}-GEN fire  
*no koto da-kara hito ga nanninmo sin-da*  
 GEN matter COP.NPST-because person NOM many die-PST  
*to omo-u yo.*<sup>26</sup>  
 QUOT think-NPST SFP  
 ‘There was a fire in Kanda today. Knowing what I know about that fire, I  
 believe that more than a few people died in it.’  
 (Kuroda 1979: 101, modified)

In (36) the speaker introduces a fire that s/he saw as an object that s/he assumes the addressee does not have direct knowledge of. Kuroda (ibid.) states:

This example may not sound perfect. Since the hearer does not in this case have knowledge of the fire in Kanda, the speaker should not be able to use *ano kazi* [according to Kuno’s (1973) characterization of the use of *so-* and *a-*]. If we replace *ano kazi* with *sono kazi*, however, complete unacceptability results. I suspect that we can perhaps accept [(36)] as it is, once we compare it with this impossible alternative [with *sono kazi*]. The use of *ano kazi no koto dakara* implies that the speaker makes the inference – based on his/her direct knowledge [of the fire] which the concept “the fire in Kanda” alone would never have given rise to – that people must have been killed [in the fire] (Kuroda 1979: 101).<sup>27</sup>

(37) summarizes the discussion so far of the semantic characterization of *so-* and *a-* in their anaphoric use in Kuroda’s framework.<sup>28</sup>

- (37) Semantic characterization of *so-* and *a-* used anaphorically:
- a. *A-* is used to express objects of direct knowledge.
  - b. *So-* is used to express objects of conceptual knowledge.

(37) cannot, however, account for the visible use of *so-* in dialogues. While the characterization of *so-* as “expressing an object of conceptual knowledge” may apply to its independent use in soliloquies, the same does not hold in dialogues. According to Kuroda, dialogues differ from soliloquies in the following way.

<sup>26</sup> The \* mark is added to the *so*-series alternative in (36) by the present author in accord with Kuroda’s judgment.

<sup>27</sup> The translation of this passage is taken from Hoji et al. (2003) and is due to Hajime Hoji.

<sup>28</sup> In Kuroda’s words (Kuroda 1979: 102):

The truly crucial factor in regard to the choice between the demonstratives *so-* and *a-* is not whether the speaker and hearer are familiar with the referent; rather, it is whether the speaker approaches/regards the referent as an object of conceptual knowledge or as an object of direct knowledge (Translation by Hajime Hoji).

In order to use demonstratives in a dialogue session, there must be a referent established prior to the session as mutually shared in the consciousness of both the speaker and the addressee either by a linguistic expression or via a psychological operation distinct from linguistic function, such as ostension or visual perception. ... In the visible use, however, only physical objects can be the referents of a demonstrative. Examples where an abstract object is the referent, therefore, are difficult to find [in such cases] (Kuroda 1979: 102–103).

Kuroda argues that even though both the speaker and the addressee have direct knowledge of the visible object, if the object is closer to the addressee, the speaker must accept that the addressee is in a better position than the speaker to apprehend that object and must accept that the addressee has access to direct knowledge of it that the speaker does not have, thereby forcing the speaker to present the object as something other than object of his/her own direct knowledge.

To summarize, the semantic characterization of *so-* in its various uses according to Kuroda is as in (38) (Kuroda 1979: 103).

(38) Characterization of *so-*

The anaphoric use of *so-* (as used in soliloquies and dialogues) captures conceptual knowledge, and the visible use of *so-* in dialogues captures somebody else's direct knowledge, as opposed to one's own direct, conscious knowledge.

### 3.3 The syntactic approach: *ko-/so-/a-* and their structural properties

Kuroda's approach can be characterized as semantic and/or cognitive in character. A different approach is taken by Ueyama (1998), who demonstrates that what Kuroda called the “anaphoric” use of demonstratives does not necessarily require a linguistic antecedent. When one linguistic expression can refer to some object in a non-linguistic context and another linguistic expression to the same object, the two expressions may co-refer to the same object independently of each other. Ueyama (*ibid.*) argues that *so*-NPs are to be distinguished from *a*-NPs in that (i) *so*-NPs require a linguistic antecedent and are subject to structural constraints on their occurrence, but (ii) *a*-NPs do not require a linguistic antecedent, and are not subject to any structural constraints on their occurrence.<sup>29</sup>

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<sup>29</sup> Ueyama (1998, 2000) is concerned with anaphoric relations between noun phrases. She takes up, therefore, only demonstrative NPs that are individual-denoting, such as *kore*, *sore*, *are*, *koitu*, *soitu*, *aitu*, *kono* NP, *sono* NP, and *ano* NP. I will refer to these in aggregate as *ko*-NP, *so*-NP, and *a*-NP for the sake of simplicity. Adverbials such as *koo* ‘in this way,’ *soo* ‘in that way,’ and *aa* ‘in that way,’ and common noun phrases such as *konna hito* ‘this kind of person,’ *sonna hito* ‘that kind of person,’ and *anna hito* ‘that kind of person’ are excluded from her generalizations.



- (39) i. A-NPs do not require an antecedent, linguistic or otherwise. *So*-NPs require a linguistic antecedent except in the case of their visible use.  
 ii. A-NPs can have independent reference without recourse to the structure in which they appear. The reference of *so*-NPs is determined by the structural syntactic relationship they have with their antecedent.<sup>30</sup>

Let us consider first some examples given by Ueyama. If there is a linguistic expression that an *a*-NP or *so*-NP can refer to, the use of either *a*-NP or *so*-NP is possible. In (40), for example, *ano gakusei* uttered by Speaker B and *sono gakusei* uttered by Speaker C can both refer to the referent of *gakusei* uttered by Speaker A.<sup>31</sup>

- (40) Speaker A: *Kinoo* ***gakusei-san*** *ga* *mat-te-masi-ta* *yo*.<sup>32</sup>  
 yesterday student NOM wait.for-PROG-POL-PST SFP  
 ‘A student was waiting for you yesterday.’  
 Speaker B: ***Ano*** ***gakusei***, *kyoo* *mo* *ku-ru* *to* *omo-u?*  
*ANO* student today also come-NPST QUOT think-NPST  
 ‘Do you think that student will come again today?’  
 Speaker C: ***Sono*** ***gakusei*** *kyoo* *mo* *ku-ru* *to* *omo-u?*  
*SONO* student today also come-NPST QUOT think-NPST  
 ‘Do you think the student you are referring to will come today too?’  
 (A and B taken from Ueyama 1998: Chapter 4.2 (15))

A-NPs cannot be used if the speaker does not know the object or person in question through direct experience, even if that object or person has been introduced earlier in the discourse. An A-NP requires that the referent be known to the speaker through direct experience prior to the current discourse, as illustrated in (41)–(43).

<sup>30</sup> The relevant structural condition is PF (Phonological Form) precedence and LF (Logical Form) c-command. In the case of PF precedence, sentence boundaries are irrelevant. See also footnote 31.

<sup>31</sup> *Ano gakusei* uttered by Speaker B presupposes that the speaker knows the student and has had some personal experience with him/her, e.g. has met him/her or has talked about him/her before with the addressee. *Sono gakusei* uttered by Speaker C can only signify ‘the student that Speaker A says was waiting for Speaker B.’ Interestingly, it does not presuppose that Speaker C cannot identify him/her. Speaker C could say *Sono gakusei, sakki mikaketa* ‘I happened to see the student you are talking about just a while ago.’ Speaker C is simply presupposing that Speaker A may not know that Speaker C knows the student and that knowledge of the student is mutually shared. See Takubo and Kinsui (1996, 1997) for details.

<sup>32</sup> The glosses have been changed slightly to conform to the style of this volume.

- (41) Context: A wife has told her husband on the phone that someone called him. He has no idea who the person is. He asks her:

#A-itu wa nante it-te-ta?<sup>33</sup>

that-guy TOP what say-PROG-PST

‘What did he say?’

(Ueyama 1998: Chapter 4.2 (16))

- (42) Context: Mary has told John about a movie she just saw. John doesn’t know the movie, but his interest has been piqued. He says:

#A-re wa omosiro-sooda ne.

that-thing TOP interesting-EVID SFP

‘That sounds interesting.’

(adapted from Ueyama 1998: Chapter 4.2 (17))

- (43) Context: A professor has been told by his secretary that there had been a student waiting for him for an hour at the door of his office the day before. The professor has no idea who the student is but feels sorry for him/her and tells the secretary:

#Kinoo ki-ta ano gakusei ga mooitido ki-tara,

yesterday come-PST that student NOM again come-COND

sugu osiete-kure.

right.away tell-give.me.IMP

‘Please tell me right away if that student who came yesterday comes again.’

(adapted from Ueyama 1998: Chapter 4.2 (18))

So-NPs, for their part, require as a condition of their use that there be a linguistic antecedent, while *a*-NPs do not, as illustrated in (44)–(45).

- (44) Context: A detective is looking for a man. He somehow believes that the man is hiding in a certain room. He breaks into the room and asks the people there:

{A/#so}-itu wa doko da?

that-guy TOP where COP-NPST

‘Where is [he]?’

(based on Ueyama 1998: section 4.2 (10) and (20))

- (45) Context: A wife has told her husband on the phone that someone called him. He has no idea who the person is. He asks her:

{#A/#so}-itu wa nante it-te-ta?

that-guy TOP what say-PROG-PST

‘What did [he] say?’

(based on Ueyama 1998: section 4.2 (16), (23))

<sup>33</sup> # here indicates that the sentence is anaphorically inappropriate even though the sentence itself may be acceptable in other contexts.

In all the examples in (40) through (45), both the *a*-NPs and the *so*-NPs have a referent in non-deictic space, i. e. outside the deictic space within which objects are visible or tangible. The difference in distribution between *so*-NPs and *a*-NPs in such cases can be accounted for in purely semantic-pragmatic terms, namely, according to whether the speaker knows the object through direct experience or not. In order to determine whether *so*-NPs and *a*-NPs are different in their *syntactic* character, we must now consider linguistic expressions for which there can in principle be no independent referent. Hoji (1991) points out that when a quantifier serves as the antecedent, only *so*-NPs are possible. Since quantifiers cannot have an independent referent, they provide a means for testing further differences in the essential character of *so*-NPs and *a*-NPs that have not been brought to light through the kind of data considered thus far, a topic we turn to in the next section.

### 3.4 Bound variable readings and syntactic differences between *so*-NPs and *a*-NPs

Ueyama (1998: Chapter 5) discusses differences between *a*-NPs and *so*-NPs with regard to the possibility of bound variable readings, pointing out that such readings are possible with *so*-NPs but not with *a*-NPs. In (46), for example, *soko*, *sono zidoosya-gaisya*, and *sore* allow readings where these are bound by their antecedent in a way that is not possible with *asoko*, *ano zidoosya-gaisya*, and *are*.

- (46) a. *Toyota-sae ga [[so-ko/\*a-soko] no ko-gaisya]*  
 Toyota-even NOM {that-place/that-place} GEN child-company  
*o suisen-si-ta*  
 ACC recommend-do-PST  
 ‘Even Toyota recommended [its subsidiary].’
- b. *Dono zidoosya-gaisya ga [[so-ko/\*a-soko] no*  
 which automobile-company NOM {that-place/that-place} GEN  
*ko-gaisya] o suisen-si-ta no?*  
 child-company ACC recommend-do-PST NMLZ  
 ‘Which automobile company recommended [its subsidiary]?’
- c. *Dono zidoosya-gaisya ga [[so/\*a]-no*  
 which automobile-company NOM {that/that}-GEN  
*zidoosya-gaisya no ko-gaisya] o suisen-si-ta*  
 automobile-company GEN child-company ACC recommend-do-PST  
*no?*  
 NMLZ  
 ‘Which automobile company recommended [that automobile company’s subsidiary]?’

- d. [*Hon o hirai-ta hito*] wa minna {*so/\*a*}-re  
 book ACC open-PST person TOP all {that/that}-thing  
*o kaw-anakerebanarana-i.*  
 ACC buy-must-NPST  
 ‘[Everyone who opens (lit., has opened) a book] must buy it.’  
 (based on Ueyama 1998: ch.5 (80))

The relevant observations made by Ueyama are summarized in (47), where ‘covariant interpretation’ means a bound variable interpretation.

- (47) a. A-NPs do not give rise to a covariant interpretation.  
 b. So-NPs can give rise to a covariant interpretation.

Ueyama (1998: Chapter 4.3) distinguishes three types of (individual-denoting) NPs: (i) those that refer to objects independently of other NPs, (ii) those that can refer to objects only when they depend on another NP that precedes them, and (iii) those that can refer to objects only when they depend on another NP that c-commands them (at LF). The distinction between (i), on the one hand, and (ii) and (iii), on the other, is based on the distinction between *a*-NPs and *so*-NPs noted earlier in Kuroda (1979) and Takubo and Kinsui (1996a, 1997). The observations in (47) are, that is to say, related to the properties of *a*-NPs and *so*-NPs as given in (48). Covariant interpretation is an interpretation that arises with a particular subclass of *so*-NP constructions, those where the antecedent NP is a quantifier.

- (48) a. A-NPs are referential and do not depend other NPs for reference.  
 b. So-NPs depend on other NPs that precede them (at PF) or c-command them (at LF) for their reference.

An *a*-NP need not depend on a coreferential NP that either precedes it at PF or c-commands it at LF, so that examples such as (49a) are possible where there is no linguistic antecedent in the preceding discourse. In (49b), *asoko* ‘that team’ is possible even though the coreferential NP *kyozin* neither precedes it at PF nor c-commands it at LF, that is, the NP marked  $\beta$  can be coreferential with the NP marked  $\alpha$ , without the former either c-commanding or preceding the latter.<sup>34</sup>

<sup>34</sup> Although this holds as a general observation, there are some very subtle exceptions to the generalization. Ueyama (1998) observes that in some special cases involving what she calls ‘quirky’ binding, *so*-NPs exhibit apparent violations of (48b). For reasons of space I will not go into detail here. Interested readers are referred to Ueyama (1998) and Hoji (2003).

- (49) a. *A-itu wa doko da!*  
 That-guy TOP where COP.NPST  
 ‘Where is he?’
- b. *[Kyonen {aso-ko/so-ko} ga kaiko-si-ta hito] ga*  
 last.year {that-place/that-place} NOM fire-PST person NOM  
*[kyozin] o uttae-ta rasii.*  
 Kyojin ACC sue-PST EVID  
 ‘They say that [a person whom [<sub>β</sub> that baseball team] fired last year] has  
 sued [<sub>α</sub> the Giants].’
- (Ueyama 1998: 189, chapter 4 (38c).)

### 3.5 *ko*-NPs

According to Kuno (1973: 288), “The *ko*-series can be used for indicating something as if it were visible to both the speaker and the hearer at the time of the conversation, and thus it imparts vividness to the conversation.” Kuroda (1979: 48–49) also suggests that *ko*-series demonstratives are similar to *a*-series demonstratives in that they refer to direct experience, but neither Kuno nor Kuroda go any deeper into the nature of this demonstrative. Hoji et al. (2003) attempt to characterize *ko*-NPs from a syntactic perspective, noting first that *ko*-NPs do not require a linguistic antecedent, as seen in (50).

- (50) Context: The president of a company has called an executive meeting regarding a certain important project. As soon as everyone has arrived, he plunges directly into the issue at hand:  
*Buraun-kun, [{ko/#so}-no purozyekuto] wa itu hazimar-u*  
 Brown-Mr. {KO/SO}-GEN project TOP when start<sub>in</sub>-NPST  
*no ka ne?*  
 NMLZ Q SFP  
 ‘When will this project start, Mr. Brown?’

Similarly, *ko*-NPs, unlike *so*-NPs, do not require any linguistic antecedent that either c-commands or precedes them for a coreference interpretation to be possible, as seen in (51) (adapted from Hoji et al. 2003).

- (51) Context: The leader of an anti-government group has called an underground meeting to decide on which members of the group will take charge of executing a plan to bomb the embassy, a plan they have been working on for several weeks. Every member is waiting for him to speak. The leader begins the meeting with the following statement:

[[{*Ko/\*so/a*}-no *keikaku*]<sub>α</sub> o *saisyo-ni kangaedasi-ta mono*]  
 {*KO/\*SO/A*}-GEN plan ACC first think.up-PST person  
*ga [taisikan bakuha keikaku]<sub>β</sub> no zikkoo sekininsya*  
 NOM embassy bombing plan GEN implementation one.in.charge  
*ni nar-u bekida.*  
 DAT become-NPST should

'The person who first thought up this plan should be the one in charge of implementing the embassy bombing plan.'

Note that {*ko/so/a*}-no *keikaku* 'this/tha plan' in (51) is neither preceded nor c-commanded by its antecedent *taisikan bakuha keikaku* 'embassy bombing plan'; hence *so*-NP in (51) is unacceptable as expected. That (51) is much better with *ko/a*-NP than with *so*-NP is consistent with our proposal that *ko*-NPs and *a*-NPs are referential, so that coreference between NP<sub>α</sub> and NP<sub>β</sub> can obtain without satisfying the PF precedence condition or the LF c-command condition.

From (51) we can see that *ko*-NPs are capable of independent reference. This is further confirmed by (52), which shows that *ko*-NPs do not allow a covariant interpretation, which requires either a PF preceding or a LF c-commanding antecedent for reference.

- (52) a. *Dono zidoosya-gaisya-mo [{so/\*ko}-no zidoosya-gaisya*  
 which automobile-company-MO {*SO/KO*}-GEN automobile-company  
*no ko-gaisya o suisen-si-ta.*  
 GEN child-company ACC recommend-do-PST  
 'Every automobile company recommended {that/\*this} company's subsidiary.'
- b. *Kanarinokazu no zidoosya-gaisya ga {so/\*ko}-no*  
 quite.many GEN automobile-company NOM {*SO/KO*}-GEN  
*zidoosya-gaisya no ko-gaisya o suisen-si-ta.*  
 automobile-company GEN child-company ACC recommend-do-PST  
 '(Each of) quite many automobile companies recommended {that/\*this} company's subsidiary.'
- c. *Toyota-sae ga [CIA ga {so/\*ko}-ko o*  
 Toyota-even NOM CIA NOM {that/this}-place ACC  
*sirabe-tei-ru to] it-tei-ru.*  
 investigate-PROG-NPST QUOT say-PROG-NPST  
 'Even Toyota says that CIA is investigating that/\*this [company].'

*Ko*-NPs thus exhibit the same referential independence as do *a*-NPs, as represented in (53).

- (53) *ko*-NPs are referential and do not depend on other NPs for their reference.

What then is the difference between *ko*-NPs and *a*-NPs? (54a) and (54b), taken from Hoji et al. (2003), are examples where *ko*-NP and *a*-NP exhibit a difference in acceptability even though they are similar in not referring to visible deictic objects. Here the difference has to do with the distance in time of an entity referred to by an NP from the pivot time of the speech act. *Ko*-NPs must refer to an entity in the temporal proximity of (here, an ‘upcoming’ event), and *a*-NPs an entity at a temporal distance from (here, ‘ten years ago’), the temporal pivot, i. e. utterance time.

- (54) a. [{*Ko*/#*a*/\**so*}-*no* *keikaku* *o* *saisyo-ni* *kangaedasi-ta* *mono*]  
 {*KO*/*A*/*SO*}-GEN plan ACC first think.up-PST person  
*o* ***kondo*** ***no*** *taisikan* *bakuha* *keikaku* *no*  
 ACC upcoming GEN embassy bombing plan GEN  
*zikkoo* *sekininsya* *ni* *si-yoo*.  
 implementation one.in.charge DAT make-VOL  
 ‘Let’s have the person who first proposed this plan be the one in charge of implementing the **upcoming** embassy bombing plan.’
- b. [{#*Ko*/*a*/\**so*}-*no* *keikaku* *o* *saisyo-ni* *kangaedasi-ta* *mono*]  
 {*KO*/*A*/*SO*}-GEN plan ACC first think.up-PST person  
*ga* ***10-nen*** ***mae*** ***no*** *taisikan* *bakuha* *keikaku* *no*  
 NOM 10-year ago GEN embassy bombing plan GEN  
*zikkoo* *sekininsya* *ni* *nar-u* *bekidat-ta*.  
 implementation one.in.charge DAT become-NPST should-PST  
 ‘The person who first proposed that plan should have been the one in charge of implementing the embassy bombing plan **ten years ago**.’

These examples show that both *ko*-NP and *a*-NP have independent reference but differ from each other in the distance between the pivot, namely, the speaker or the utterance time, and the entity they refer to.<sup>35</sup>

<sup>35</sup> See Mikami (1972: Chapter 6) for a discussion of pseudo-anaphoric uses of *ko*-NPs and their characterization.

### 3.6 Summary of Section 3

Let us mark demonstratives that have independent reference and do not require a linguistic antecedent as having the property [+D] and those that do not have independent reference and require a linguistic antecedent as having the property [-D]. Demonstratives marked as [+D] are either [+Proximal] if the object referred to is located close to the speech pivot, in which case they are realized as *ko*-NPs, or are [-Proximal] if the object referred to is located far from the speech pivot, in which case they are realized as *a*-NPs. Demonstratives marked [-D] cannot be specified for proximity and are realized as *so*-NPs. This is schematized in (55).

- (55) Non-visible demonstratives
- |                                         |                                                                     |                                                           |
|-----------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------|
| With independent reference [+D]         | $\left\{ \begin{array}{l} \nearrow \\ \searrow \end{array} \right.$ | [+Proximal]: <i>ko</i> -NPs<br>[-Proximal]: <i>a</i> -NPs |
| Requiring a linguistic antecedent [-D]: |                                                                     | <i>so</i> -NPs                                            |

The characterization of non-visible *ko*- and *a*- in (55) parallels that of visible uses of *ko*- and *a*-; that is, they refer to an object of which the speaker has direct experience, following the generalization of Kuroda (1979), the only difference being whether they refer to objects the speaker perceives (sees, touches, or hears) or non-visible objects that the speaker has directly experienced in the past.<sup>36</sup> *So*-NPs are assigned the property [-D] and cannot take a proximity value, but rather require a linguistic antecedent that either c-commands them at LF or precedes them at PF.

Notice that an account has not yet been provided of visible *so*-NPs. In the next section I will show how the system proposed above, with some modification, is able to account for the use of visible *so*-NPs as well.<sup>37</sup>

<sup>36</sup> Our approach does not lead to the paradox of mutual knowledge referred to in section 3.1, because given that the information is directly experienced, it is shared and directly accessed between the conversational participants.

<sup>37</sup> Section 4 is based on the discussion in Takubo (2008), which is an extension of Hoji et al. (2000b and 2003).



## 4 Cognitive properties of Japanese demonstratives and deictic *so*-NPs

### 4.1 Cognitive properties of Japanese demonstratives

In the analysis proposed above, *ko*-NPs and *a*-NPs are marked [+D], not requiring a linguistic antecedent, and are able to refer directly to objects in the deictic space, namely the space within which one can see, hear, and feel objects. They can be distinguished from each other by the feature [+/-Proximal] and are interpreted as follows.

- (56) A *ko*-NP is marked [+Proximal] and refers to a *proximal* object  
 An *a*-NP is marked [-Proximal] and refers to a *distal* object.

Here [+/-Proximal] represents a linguistic feature, and *proximal* and *distal* are cognitive characteristics. *Ko*-NPs must have the linguistic feature [+Proximal] and *a*-NPs [-Proximal] as their lexical properties. But whether an object is to be considered *proximal* or *distal*, being cognitive in nature, depends partly on the subjective choice of the cognitive agent. As a cognitive agent, the speaker has the discretion to assign the feature *proximal* to an object which others may consider *distal* and refer to it using a linguistic form with the feature [+Proximal], namely a *ko*-NP. But s/he may also assign the cognitive feature *distal* to another object at the same physical distance as the latter and refer to it using a linguistic form with the feature [-Proximal], namely an *a*-NP.

Hoji et al. (2003) discuss cognitive factors that may enter into determining the proximality of an object, i. e. whether an object is treated as *proximal* or *distal*. Physical distance will naturally play some role in determining this. When the cognitive agent is touching an object, the distance from the object is zero and the object can only be treated as *proximal* and referred to by a demonstrative marked [+Proximal], as in (57a).<sup>38</sup> If it is far away, it must be treated as *distal* and referred to by a demonstrative marked [-Proximal], as in (57b).

- (57) a. Context: pointing to someone the speaker has his/her arm around.  
           {*Ko*/#*A*}-*no*    *hito*        *wa*    *amerikazin*    *des-u*.  
           {*KO*/*A*}-GEN   person   TOP   American   COP.POL-NPST  
           {'This/#that} person is an American.'

<sup>38</sup> In addition to physical distance, controllability is known to play a role in recognizing an object as *proximal*. A part of one's back that one cannot reach cannot be treated as *proximal* and referred to as *koko* 'this part,' a demonstrative marked [+Proximal]. But a part of one's body that one can move at will and show to the addressee can be referred to as *koko*, indicating that controllability is relevant to the assignation of proximality.

- b. Context: pointing to someone standing 10 meters away  
 {A/??Ko}-no hito wa amerikazin des-u.  
 {A/ KO}-GEN person TOP American COP.POL-NPST  
 ‘{That/??this} person is an American.’

Physical distance, however, is not the only factor relevant to determining cognitive distance. Suppose that the speaker is a person of socially superior rank, has ordered a person to stand 10 meters away, and is explaining to his subordinate who the person is. In such a situation, the utterance in (58) seems acceptable with either *a*- or *ko*-, despite the fact that the distance between the speaker and the person referred to remains the same (Hoji et al. 2003: 108).

- (58) {A/Ko}-no otoko wa [(wasi ga kondo amerika kara  
 {A/KO}-GEN man TOP I NOM this.time America ABL  
 tureteki-ta) amerikazin] zya.  
 bring-PST American COP.NPST  
 ‘{That/this} man is an American (that I brought from America this time).’

Hoji et al. (2003) also suggest that relative salience among objects may play a role in determining the proximality status assigned to them, as shown in (59).

- (59) Context: Pointing to a tall tree 20 meters away standing all by itself in a large field.  
 a. {A/Ko}-no ki wa nan-no ki des-u ka?  
 {A/KO}-GEN tree TOP what-GEN tree COP.POL-NPST Q  
 ‘What kind of tree is {that/this} tree?’  
 b. {A/Ko}-no ki wa kasinoki des-u.  
 {A/KO}-GEN tree TOP oak COP.POL-NPST  
 ‘{That/this} tree is an oak.’

The acceptability of (59a) does not seem different from that of (59b). The choice between *ko*- and *a*- in (59) thus seems independent of the physical distance from the speaker, unlike examples such as (57)–(58). The relevant factor determining the choice between *ko*- and *a*- in (59) seems to be salience of some sort. Compare (59) with (60).

- (60) Context: pointing to a tall tree standing 20 meters away, surrounded by many other trees.  
 {A/??Ko}-no ki wa kasinoki des-u.  
 {A/KO}-GEN tree TOP oak COP.POL-NPST  
 ‘{That/this} tree is an oak.’

In the case of (59), the tree in question is visibly salient, unlike the tree in (60). (61) is a particularly extreme case in point.

- (61) Context: pointing to a gigantic spaceship covering the entire sky, as in the movie *Independence Day*.  
 {Ko/#A}-re wa doko kara ki-ta n da!  
 {KO/A}-thing TOP where ABL come-PST NMLZ COP.NPST  
 ‘Where does {this/#that} come from!’

The above examples all show that proximality is a cognitive notion that may vary depending on how the cognitive agent perceives the object in assessing its distance. There are, however, cases where no cognitive consideration is involved in the selection of the demonstrative used. Such is precisely the case with visible *so*-NPs, the topic of the next section.

## 4.2 Visible *so*

When talking to oneself, an object can be referred to using either a *ko*-NP, as in (62a), or an *a*-NP, as in (62b), depending on how one perceives it.

- (62) Context: a king is sitting on his throne at one end of a room in his palace, looking at a red chair placed at the other end of the room. He is all by himself, talking to himself.
- a. *Kono akai isu wa Pekin de kat-ta.*  
 this red chair TOP Beijing LOC buy-PST  
 ‘I bought this red chair in Beijing.’
- b. *Ano akai isu wa Pekin de kat-ta.*  
 that red chair TOP Beijing LOC buy-PST.  
 ‘I bought that red chair in Beijing.’

Suppose that in this situation his subordinate comes in and stands next to the red chair. In speaking to his subordinate, the king can no longer use the *a*-NP to refer to the red chair that he used when he was talking to himself.

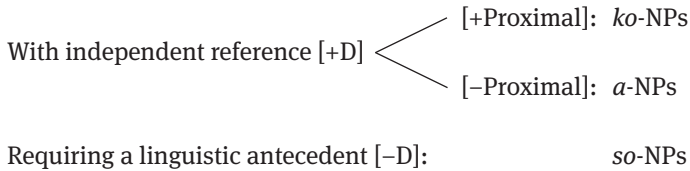
- (63) {Ko/So/\*A}-no akai isu wa naa, wasi ga Pekin  
 {KO/SO/A}-GEN red chair TOP FL I NOM Beijing  
 de kat-ta no zya.  
 LOC buy-PST NMLZ COP.NPST  
 ‘I bought {this/that/#that} chair in Beijing.’

The acceptability of the *so*-NP and the non-acceptability of the *a*-NP in (63) are very robust, and the two cannot be interchanged, as can the *a*-NP and the *ko*-NP in (62). In the following two sections, I will examine how our characterization of anaphoric *so*-NPs can be extended to account for properties of visible *so*-NPs.

### 4.3 An account of visible *so*

In this section I will propose an account of the behavior of visible *so*-NPs based on Hoji et al. (2000b, 2003) and Takubo (2008). In most previous studies, deictic *so*-NPs have been characterized as referring to an object located near the addressee. The characterization of non-visible demonstratives we presented earlier in (55), repeated here, does not readily account for this fact.

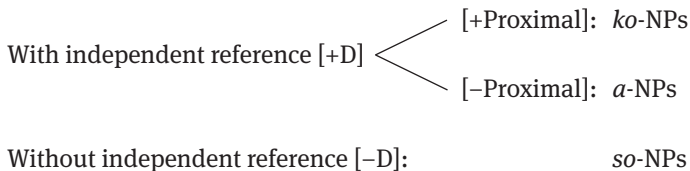
(55) Non-visible demonstratives



According to (55), the specification [+Proximal] or [-Proximal] can only be assigned to NPs that have the [+D] feature. *So*-NPs do not have the [+D] feature, which prevents the feature [+Proximal] or [-Proximal] or from being assigned to them and makes it impossible for them to refer to something near the addressee. The definition of [-D] as requiring an antecedent likewise does not apply to visible *so*-NPs, which obviously have no linguistic antecedent. If (55) is to apply to the visible use of *so*-NPs, then, we must either revise the characterization of [+D] to allow for the specification of a proximity value for NPs without the [+D] feature or revise the characterization of [-D] as obligatorily requiring a linguistic antecedent. We will here take the second option and revise the characterization of [-D].

Instead of defining [+ or -D] in terms of requiring or not requiring an antecedent, we propose to characterize D as “having or not having independent reference” and to revise (55) accordingly as (55’).

(55’) Demonstratives



The visible use of *so*-NPs can now be accounted for by (55') in conjunction with the principle in (64) proposed in Hoji et al. (2000b) to govern the use of *so*-NPs in general.

- (64) *So*-NPs are used when the cognitive feature *proximal/distal* cannot be assigned with respect to an object in question, that is, when it cannot be referred to either by *ko*- [+Proximal] NPs or *a*-[-Proximal] NPs.

Since demonstratives having the lexical specification [+/-Proximal] can only be used exclusively for objects specified for *proximal* or *distal*, objects that cannot be specified in that way cannot be referred to with demonstratives having the linguistic feature [+D]. As indicated in (64), when neither proximality value [+Proximal] or [-Proximal] can be assigned, a demonstrative with the feature [-D] is therefore used as “a last resort.”<sup>39</sup>

#### 4.4 *So*-NPs used when there is no characterization of [+/-Proximal]

Let us consider now how the distance of an object is determined in arriving at its proximality for the purposes of choice of demonstrative. The speaker as cognitive agent (EGO) measures the distance from his/her physical body (let us call this VE1 = vehicle of EGO) to a visible object. When an addressee comes onto the scene, EGO creates an extended body consisting of the physical body of the speaker plus the physical body of the addressee (let us call this VE2 = vehicle of EGO and that of the addressee). In addressing the addressee, the speaker now measures the distance to a visible object by reference to the extended body. As we shall see shortly, “visible *so*-NPs” are used when there is a conflict between measuring the distance of the visible object from the speaker’s own body and measuring it from the extended body.

In the case of a soliloquy, it is clear that the choice of *proximal/distal* is made on the basis of a (mental) measurement of the distance of an object from the physical body of the speaker.<sup>40</sup> But the situation becomes more complicated in dialogues,

<sup>39</sup> This characterization can be applied to what is sometimes called ‘medial *so*-,’ which is used when the speaker and the addressee are facing in the same direction, that is, in a situation where ‘inclusive *we*’ can be used. A typical example of this is when the speaker, giving directions to a taxi driver, says *Sokora hen ni tomete kudasai* ‘Please stop somewhere around there,’ a form of instruction used when the speaker cannot identify or chooses not to identify the exact location where s/he wants the driver to stop. *So*-NP can also be used when talking to oneself, as, for example, in *Dokoka sokorahen ni aru hazuda ga* ‘It must be somewhere around here.’ The use of *so*-NP in such cases can be seen to be motivated by the fact that distance of the object in question from the speaker cannot be exactly specified. See Kinsui and Takubo (1992) and the references therein for more examples like these.

<sup>40</sup> For ease of exposition, I will from now on refer to the (physical) bodies of the speaker and the addressee as simply ‘the speaker’ or ‘the addressee’ when this meaning is clear from the context.

where the speaker has to take the addressee into account and, in particular, has to determine how the distance to an object is measured when talking to the addressee. *So*-NPs in the visible use are usually characterized as referring to an object near the addressee, but this is not quite accurate. Visible *so*-NPs are to be used when the object in question is both near the addressee and far removed from the speaker. If it is near to both the addressee and the speaker, *ko*-NPs are the appropriate form to use. In determining the cognitive distance of an object, therefore, both the speaker and the addressee must be taken into consideration.

In soliloquies, the distance of an object can straightforwardly be defined as *proximal* if EGO perceives it as near himself/herself. When another individual comes onto the scene as the addressee, the distance to the visible object is measured instead by reference to VE2. Under these conditions, however, EGO is the sole cognitive agent and the addressee comes into play only as a physical, not a cognitive, entity, so measurement of the distance to the object is the sole prerogative of EGO. In taking the addressee's body into account in measuring this distance, the EGO is faced with a choice. If the EGO (speaker) adopts the same point of view as the addressee, that is, if the EGO includes both his/her body and that of the addressee together in an "inclusive we" point of view, the deictic center is single, and the distance to the object is unchanged whether the deictic center is taken as VE1 or VE2. But if the speaker adopts a point of view distinct from the addressee, that is, if the speaker takes the "exclusive we" point of view, the addition of the addressee will make a difference in the measurement of the distance in question. In what follows we will outline the procedure followed in calculating this measurement.

We take as assumed, first of all, the principle in (65), where E is an object that the demonstrative refers to, VE<sub>i</sub> is either VE1 or VE2, and *proximal* or *distal* (E, VE<sub>i</sub>) is to be interpreted as E is *proximal* or *distal* with respect to VE<sub>i</sub>.

(65) Binariness of proximality value<sup>41</sup>

A single object cannot be both *proximal* and *distal* with respect to another object at the same time.

$$\neg \textit{proximal} (E, \textit{VEi})_{\text{def}} = \textit{distal} (E, \textit{VEi})$$

$$\textit{proximal} (E, \textit{VEi})_{\text{def}} = \neg \textit{distal} (E, \textit{VEi})$$

<sup>41</sup> This definition of proximality is not self-evident. Even if *proximal* and *distal* each have one of two values [+/-], a third value of *not proximal* and *not distal* could be possible even under the assumption that an object cannot be *proximal* and *distal* at the same time.

As noted earlier and repeated in (66), VE1 represents the body of the EGO and VE2 the extended body of the EGO that includes both the body of the EGO and the body of the addressee.

- (66) VE1 = the body of the speaker  
 VE2 = the body of the speaker and that of the addressee

*Proximity value* (E, VE1), therefore, is to be defined as in (67).

- (67)  $distal(E, VE1)_{def} = distal(E, \text{the body of the speaker})$   
 $proximal(E, VE1)_{def} = proximal(E, \text{the body of the speaker})$

We take the proximity value of an object measured from VE2 to be defined as in (68).

- (68) a.  $distal(E, VE2)_{def} = distal(E, \text{addressee})$  and  $distal(E, \text{speaker})$   
 b.  $proximal(E, VE2)_{def} = proximal(E, \text{addressee})$  or  $proximal(E, \text{speaker})$

The definition of *distal* (E, VE2) in (68a) corresponds to the standard description of the distal demonstrative: an object is defined as *distal* with respect to VE2 if and only if it is *distal* with respect to both the speaker and the addressee.<sup>42</sup> Under the assumption in (65), *proximal* (E, VE2) is defined as the negation of *distal* (E, VE2), so that (68b) is derived from the negation of (68a), as seen in (69).

- (69)  $Proximal(E, V2)_{def}$   
 $= \neg[distal(E, V2)]$  By (65)  
 $\neg[distal(E, V2)_{def}]$   
 $= \neg[distal(E, \text{addressee}) \text{ and } distal(E, \text{speaker})]$  By (68a)  
 $= \neg[distal(E, \text{addressee})] \text{ or } \neg[distal(E, \text{speaker})]$   
 By de Morgan's law  
 $= proximal(E, \text{addressee}) \text{ or } proximal(E, \text{speaker})$  By (65)

Another assumption we make is the one in (70). (70) states that the lexical choice of a demonstrative NP is based on the cognitive value of the object with respect to VE1 and VE2.

<sup>42</sup> This is the standard characterization of how *a*-NPs are used and the definition of *a*-NPs adopted by most researchers, including Matsushita (1930) and Kuno (1973). If one starts with the definition of *proximal* as  $proximal(E, VE2)_{def} = [proximal(E, \text{the addressee}) \text{ and } proximal(E, \text{the speaker})]$  and defines *distal* (E, VE2) as the negation of *proximal* (E, VE2), it would lead to the counterintuitive result that  $distal(E, VE2) = [distal(E, \text{speaker}) \text{ or } distal(E, \text{addressee})]$ . By this definition, the case of  $[distal(E, \text{addressee}) \text{ and } proximal(E, \text{speaker})]$  would be expressed as *distal*, which is in fact never the case.

- (70) Lexical interpretive constraint on demonstrative NPs  
 The linguistic features of [+/-Proximal] must match the cognitive proximity value of an object with respect to VE1 and VE2.

Additionally, we claim that the constraint in (70) holds between VE1 and VE2.

- (71) Expansion constraint on VE1 and VE2  
 The object E has no proximity value with respect to VE2 if the proximity value of E with respect to VE1 and that with respect to VE2 conflict. Neither *ko*-NPs [+Proximal] nor *a*-NPs [-Proximal] can, therefore, be used when such a conflict occurs.

(71) ensures that the proximity value does not change when VE1 is expanded to VE2 by the addition of the addressee. When an object E is near the speaker, that is, when the speaker judges an object E to be *proximal* with respect to VE1, that object remains *proximal* even when VE1 is expanded to VE2 by the introduction of the addressee. This is so because E is *proximal* with respect to VE2 when E is *proximal* either to the speaker or to the addressee, the distance from the addressee being irrelevant when E is considered near the speaker. By contrast, when an object E is considered far from the speaker, that is, when *distal* (E, VE1), the expansion constraint is not violated when E is considered to be far from the addressee, making E to be *distal* with respect to VE2.

There are two cases where the proximity values for VE1 and VE2 conflict. (72) is one such case.

- (72) *proximal* (E, VE1)  
*distal* (E, VE2)

(72), however, cannot arise by definition of proximity value because if *proximal* (E, VE1) is the case, *proximal* (E, VE2) is always the case, and *distal* (E, VE2) never the case. The fact that if an object is *proximal* to the body of the speaker, then the object cannot be *distal* even if the addressee is taken into account can be shown as in (73). The last line of (73) says that an object E is both near the speaker and not near the speaker, a contradiction. So, if an object is near the speaker, it cannot be extended to VE2 in the case of (73) without contradiction, meaning that such a case will never arise.

- (73) *proximal* (E, VE1) and *distal* (E, VE2)  
 = *proximal* (E, speaker) and [(*distal* (E, speaker) and *distal* (E, addressee))]  
     By definition of *distal* (E, VE2) in (68a)  
 = *proximal* (E, speaker) and [(¬*proximal* (E, speaker) and ¬*proximal* (E, addressee))]  
     By binarity of proximity value in (65)



A second case where a conflict arises in the proximity value for VE1 and VE2 with respect to E is given in (74).

- (74) *distal* (E, VE1)  
       *proximal* (E, VE2)

In contrast to (72), (74) is a logically possible situation that arises when *distal* (E, speaker) and *proximal* (E, addressee), namely, when the object E is perceived to be near the addressee and far from the speaker, as shown in (75).

- (75) *distal* (E, VE1) and *proximal* (E, VE2)  
       = *distal* (E, speaker) and [(*proximal* (E, speaker) or *proximal* (E, addressee))  
           By definition of *proximal* (E, VE2) in (68b)  
       = [*distal* (E, speaker) and *proximal* (E, speaker)] or [*distal* (E, speaker) and *proximal* (E, addressee)]  
           By the distributive law  
       = *distal* (E, speaker) and *proximal* (E, addressee)  
           By (65)

The expansion constraint is violated in this case and therefore, a proximity value cannot be assigned to the object here. As a consequence, it cannot be referred to by means of a linguistic expression with a specification for [+/-Proximal]. That, we claim, is the reason why *ko*-NPs and *a*-NPs cannot be used in this case and *so*-NPs, which are not assigned a proximity value, must be used by default. We argue that *so*-NPs are in general used as a last resort in cases like (74) where a proximity value cannot be assigned. This way of capturing the properties of visible *so*-NPs enables us to maintain the characterization of *so*-NPs as [-D] in (55'), i. e. as NPs with no specification for proximity.

## 4.5 Summary of Section 4

The discussion in Section 4 above can be summarized as follows:

- The proximity value of an object is determined by the speaker as the cognitive agent on the basis of the distance from the body of the speaker and of the addressee.
- *So*-NPs are not specified for [+/-Proximal]. They cannot therefore refer to an object when the proximity value of the object is specified.
- *Ko*-NPs and *a*-NPs cannot be used to refer to an object when the proximity value of the object is not specified.
- *So*-NPs must be used as a last resort when the proximity value of an object is not specified.

## 5 Concluding remarks

In this chapter, I have discussed nominal expressions whose meaning crucially involves deictic phenomena: personal nouns, the use of descriptions for expressing personal deixis, and demonstratives. As observed in Section 2, Japanese does not have personal pronouns, a reflection of the fact that it does not have verbal agreement, although Japanese personal nouns perform the same function as personal pronouns in English in that they exhibit indexical or perspective shift. First and second person nouns in Japanese may, therefore, be treated as the equivalents of *I* and *you* in that the truth conditions of sentences containing these forms cannot be determined without their referents or indexical values being provided by the speech context. As discussed in Section 2, however, the class of first person nouns (*watasi*, *ore*, *wasi*, *boku*, etc.) and the class of second person nouns (*anata*, *omae*, *anta*, *kimi*, etc.) form open classes in Japanese whose range of use is nevertheless limited for the most part to use among close friends and family members. These cannot therefore be treated as a grammatical category of personal pronouns. I have therefore argued that personal nouns should be treated as a separate lexical category of their own. For the purpose of addressing a person who is unfamiliar or to whom respect is to be accorded, kinship terms with honorific or diminutive suffixes and terms for social positions, with or without an honorific form suffixed, may be used.<sup>43</sup>

Also as seen in Section 2, personal nouns and terms of address use different mechanisms of referring. Nominal expressions in the former category are lexically specified as to the persons they denote, whereas terms of address are used to refer to the second person (addressee), something that is possible either when they are used as vocatives or when they appear in sentence internal grammatical positions, whether or not there is a preceding coreferential vocative. Kinship terms and *sensei* ‘teacher’ can be used to refer to the first person under the limited conditions of the speaker taking a parental point of view, i.e. when the speaker identifies with the viewpoint of the addressee so as to avoid the need for an indexical shift of the sort considered difficult for small children to process.

A few words are in order regarding the Japanese equivalents of third personal pronoun forms, *kare* and *kanozō*, which were not discussed in the body of this chapter. These were originally distal demonstratives in Old Japanese that fell out of use in Middle Japanese but were reintroduced into Japanese relatively recently in the late Edo period as glosses used in books on English grammar (Okumura 1954). These cannot be used as full-fledged anaphors, because their use is limited to objects of shared knowledge, and they cannot be used as non-referential NPs, as demonstrated in Takubo and Kinsui (1997). More importantly, as discussed in Hoji (1991), they

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<sup>43</sup> One may add to this list nouns for job with an honorific suffix (e.g. *sakanaya-san*, *sakanaya* (fish-monger)).

cannot naturally be used as bound variable anaphors with a LF-c-commanding antecedent, one of the important functions of personal pronouns.<sup>44</sup>

Sections 3 and 4 took up the phenomena of demonstratives in Japanese. Unlike traditional treatments of Japanese demonstratives, we have shown that the Japanese demonstratives *ko-*, *so-*, and *a-* do not constitute a tripartite system, but rather a binary system: *ko-* and *a-*, which are [+D], capable of independent reference, on the one hand and *so-*, which is [-D], incapable of independent reference, on the other. We proposed in this chapter an analysis of Japanese demonstratives that treats the visible and anaphoric uses of demonstratives in a unified way and accounts for their syntactic behavior, in particular, the fact that only *so*-NPs allow a covariant interpretation. We also showed that the visible use of *so*-NPs can be accounted for by this binary system if a few very natural assumptions are adopted about how the distance between the speech act pivot and the object referent is measured when the addressee is taken into consideration.

This chapter has dealt with nominal deictic expressions mainly from the point of view of pragmatics and discourse, focusing on how they get their reference, and only passing reference has been made to the role of syntactic structure in the behavior of nominal deictic expressions. Given that, as shown in section 3, non-visible *so*-type NPs derive their reference from linguistic antecedents only, the distinction between *so*-type NPs, on the one hand, and *a*-type and *ko*-type NPs, on the other, is a potentially fertile area for investigating the boundary between syntax and pragmatics, but is a topic we must leave for future research.

## Acknowledgements

This chapter is based on two earlier papers of mine written in Japanese, Takubo (1997) and Takubo (2008), the latter of which is based on Hoji et al. (2000b) and Hoji et al. (2003). I would like to thank Hajime Hoji, Ayumi Ueyama, and Daniel Plesniak for reading an earlier version of the manuscript and giving me valuable comments, and also an anonymous reviewer who gave me numerous comments and suggestions for improvement. I would also like to thank Wesley Jacobsen for his comments and help in improving the style of this chapter.

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<sup>44</sup> This is illustrated in an example such as the following.

- (i) \**Daremo* ga [<sub>NP-S</sub> *kare* ga *tukut-ta*] *omotyā* o *kowasi-ta*.  
 everyone NOM he NOM make-PST toy ACC break<sub>tr</sub>-PST  
 ‘Everyone broke the toy that he had made.’ (Hoji (1991 (1)).

But see also Hoji et al. (2000a) for examples of *kare* that do allow a bound variable reading.

## Additional abbreviations

CAUS – cause, DIM – diminutive, FL – filler, NPST – nonpast, TENT – tentative

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## 16 Social deixis in Japanese

### 1 Introduction

Linguistic expressions that cannot be fully interpreted without recourse to contextual information are called “deictics.” The time deictic “tomorrow,” for example, can only be accurately interpreted if we know something about the time at which it was uttered. Person deictics like *I* or *you* can only identify specific individuals if we know who the speaker is at the time of utterance. To talk of “social deictics” then is to talk of expressions that are interpreted by recourse to some social aspect of the context, typically the status or rank of participants to a speech event, or the degree of formality of a situation, all very culture-specific kinds of information. Honorifics are prototypical examples of social deictics and the Japanese language possesses a pervasive repertoire, affecting most grammatical categories. They are also a much talked about feature of the Japanese language, and discourses about norms of honorific use, and especially alleged misuse, are a site of intense debate in many public domains. Because of its linguistic and social significance, social deixis has been studied extensively, in many and diverse scholarly traditions from descriptive to formal linguistics, pragmatics, and sociolinguistics. This chapter introduces the notion of social deixis and, through an overview of a number of different approaches to its study, discusses different features and properties of the deictic system of Japanese. By discussing what various approaches highlighted as well as what they neglected, it also provides a critique of previous approaches and suggests alternative perspectives that can better capture the different facets of this phenomenon.

While the definition of deixis postulates that contextual information is necessary to the interpretation of a deictic marker, there are different views about which forms of language properly belong to a study of deixis. Levinson’s (1983) characterization of deixis as “ways in which languages *encode* or *grammaticalize* features of the context or utterance or speech event” (Levinson 1983: 54, my italics) limits considerably the scope of phenomena that can be counted as deictic. Fillmore (1975), taking a more inclusive view, maintained instead that deictics are not unlike speech acts, because in both cases interpretation of meaning requires consideration of the social relations in which the speaker is involved. Levinson’s (1983) stricter parameters forced him to distinguish the study of deixis from other sociolinguistic matters – while the former has to do with the “encoding in language structure of social information” (Levinson 1983: 93),<sup>1</sup> the latter are for him only a matter of language use. These broad epistemological

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<sup>1</sup> It must be noted that in a more recent discussion, Levinson (2004: 119) bypasses the ‘coding’ issue and proposes that “social deixis involves the marking of social relationships in linguistic expressions,

issues are worth mentioning because the question of demarcation is extremely relevant to the study of Japanese too: while most traditional accounts of social deixis in Japanese have focused on honorifics (i. e. grammaticalized forms and lexical systems, or *keigo* in a narrow sense), others have broadened the field of analysis not only to anti-honorification – or “impoliteness” – but also verbal or discursive strategies, and have come to be known more generically as “politeness” studies, a distinction that in the Japanese literature can be seen between the study of *keigo* (honorifics) vs. *taiguu hyoogen* (‘expressions of interpersonal treatment’). Consider for example the following utterance:

- (1) *Sasitukae-na-kereba*      *o-namae*      *o*      *o-osie*  
trouble.exist-NEG-COND   HON-name   ACC   HON-tell.INF  
*itadak-e-mas-u*                      *des-yoo*                      *ka.*  
receive<sub>HUM</sub>-POT-POL-NPST   COP.POL-TENT   Q  
‘If you don’t mind, could you tell me your name?’

The example above, a typical prescriptive expression recommended as appropriate to service encounters in one of a myriad of “manner classes” now widely accessible on the world wide web, illustrates a range of different deferential devices, some of which would go unnoticed if the analysis only focused on honorifics. The utterance contains grammaticalized honorific structures, such as the polite prefix *o-* in *o-namae* ‘your name’ or the humble construction *o+verb stem+itadak-* in *o-osie itadakemasu* ‘can receive<sub>HUM</sub> (your) telling’ but also pragmatic strategies that convey, among other things, meanings that service politeness, such as indirectness (e. g., the presumptive form *desyoo* or the potential benefactive form *itadakemasu*) or non-coerciveness (e. g., the formulaic expression *sasitukaenakereba* or the interrogative *ka*) and can be considered polite alternatives to direct commands. All of these devices, grammaticalized or not, have the potential to index some form of social stance or social relation.

The study of social deixis from many different vantage points has resulted in a surprising variety of terminologies to refer to linguistic forms and the formal or functional categories that they realize (for reviews see Wetzel 2004: 7–42 and Pizziconi 2004a: 270–275). Not always helpfully, the same tags have been used to describe phenomena of various kinds: forms, their meanings or even speaker attitudes. Common

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with direct or oblique reference to the social status or role of x.” In this work he notes that deictics must contain both some context-free and some context-dependent properties, an important point which will also be discussed in this chapter, but again appears to conceptualize social context in a somewhat simplified and static fashion, as self-evident sociological dimensions unproblematically or homogenously presupposed and indexed by all speakers, rather than the much more contested, ideologically-driven arena that users experience in daily life, and that recent trends in the philosophy of language, critical discourse analysis, and linguistic anthropology have highlighted instead.

terms found in the literature are “polite,” “formal,” “honorific,” “humble,” “derogatory,” or “neutral,” but many scholars have devised additional ones in order to describe in detail specific morpho-syntactic, pragmatic, semantic or stylistic features. So we can also find labels such as “speech style/level markers” (Harada 1976; Martin 1964; Jones and Ono 2008), “*uti/soto*” (‘ingroup/outgroup’)<sup>2</sup> forms (Makino 2002), “respectful,” “deferential,” “exalted” forms (Martin 1964); “elegant” (Martin 1964; S. Ide 2005; Minami 1987), “distal/direct” (Jorden and Noda 1987) “hyper-polite” (Martin 1964; Makino 2002; Endo Hudson 2008), “semi-formal” forms (Endo Hudson 2008; Uehara and Fukushima 2008), and others. Similarly, subtle distinctions can be found in Japanese accounts, with terms such as *teineigo*, *teityoogo* for categories of addressee honorifics (Ōishi 1975; Kikuchi 1997), *bikago*, *zyoohingo* (ibid. and Tsujimura 1967) for indexicals of speaker demeanor, *sonkeigo*, *sontyoogo* for referent honorification, which make comparisons, and translations, rather arduous. To complicate things further, the same form may be classified under multiple categories, a troublesome but inevitable result of their multifunctionality (as noted by Ōishi 1975: 94 and others, and an important feature of indexicals, as will be shown below). Because of this very complex landscape, it is not possible to provide a single agreed taxonomy or even a list of examples which may illustrate the relevant categories uncontroversially. The two tables below are offered as a referent point for terms that will be used in this chapter, and provide a brief overview of the Japanese linguistic expressions that have received scholarly attention. It is worth noting that the categories, tags, and examples shown in these table are the prescriptive ones that are often invoked in normative accounts of Standard Japanese, but do not represent other equally common but non-normative usages, nor other regional variants. This chapter will not provide a description of each category, nor will it provide a separate account of impoliteness phenomena (a far less researched, though not less important domain) as the generalizations presented here apply to it nonetheless; for a general overview see Kindaichi et al. (eds.) (1990: 626).

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2 In Makino’s (2002: 123–133) discussion *uti/soto* can also refer to intra/extrapersonal consciousness.



**Table 1:** Various taxonomies of neutral/honorific (sub)categories (small caps indicate common ways of glossing)

| Target of ‘treatment’ ( <i>atukai no taisyoo</i> ) or object of honorification |                                                                        |                                                                                    | Linguistic categories                                              |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| No specified target                                                            |                                                                        |                                                                                    | PLAIN/NEUTRAL FORMS<br>普通語 <i>hutuugo</i> /<br>対等語 <i>taitoogo</i> |
| Addressee honorification                                                       |                                                                        |                                                                                    | POLITE FORMS<br>丁寧語 <i>teineigo</i><br>丁寧語 <i>teityoogo</i>        |
| 対者敬語 <i>taisya keigo</i>                                                       |                                                                        |                                                                                    | VULGAR/DEROGATORY FORMS<br>卑馬語 <i>hibago</i><br>軽卑語 <i>keihigo</i> |
| Speaker/addressee honorification                                               |                                                                        |                                                                                    | BEAUTIFYING FORMS<br>美化語 <i>bikago</i>                             |
| Speaker honorification                                                         |                                                                        |                                                                                    | ARROGANT EXPRESSIONS<br>尊大表現 <i>sondai hyoogen</i>                 |
| Referent<br>honorification                                                     | AGENT EXALTATION/<br>HONORIFICATION<br>動作主尊敬<br><i>doosasyu sonkei</i> | HIGH-RANKING SUBJECT<br>HONORIFICATION<br>上位主体語・敬称<br><i>zyooisyutaigo-keisyoo</i> | DEFERENTIAL FORMS<br>尊敬語 <i>sonkeigo</i>                           |
|                                                                                | OBJECT EXALTATION/<br>HONORIFICATION<br>対象尊敬<br><i>taisyyoo sonkei</i> | LOW-RANKING SUBJECT<br>HUMILIFICATION<br>下位主体語・謙称<br><i>kaisyutaigo – kensyoo</i>  | HUMBLE FORMS<br>謙讓語 <i>kenzyoogo</i>                               |
| 素材敬語<br><i>sozai keigo</i>                                                     |                                                                        |                                                                                    |                                                                    |

**Table 2:** Repertoire of “social deictic” devices by linguistic category and corresponding examples (small caps indicate common ways of glossing)

| Category                                      | Examples (with qualifications)                                                                                                                                                                                      |
|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Phonological devices                          |                                                                                                                                                                                                                     |
| Phonological reductions, pitch, voice quality | <i>Dekee</i> (< <i>dekai</i> ‘big’)<br>low/high pitch modulation, breathiness                                                                                                                                       |
| Morphosyntactic devices                       |                                                                                                                                                                                                                     |
| Predicates: copula                            | <i>da</i> (COLLOQUIAL), <i>dearu</i> (WRITTEN), <i>desu</i> (NEUTRAL/FORMAL), <i>degozaimasu</i> (FORMAL)                                                                                                           |
| Affixes                                       |                                                                                                                                                                                                                     |
| Nouns and adjectives:                         | HONORIFIC prefix <i>o/go-</i> : <i>go-kazoku</i> (family); <i>o-isogasai</i> (busy), etc.<br>PEJORATIVE suffix <i>-me</i> : <i>boozume</i> (a naughty lad/boy)                                                      |
| Predicates:                                   | <i>o-V-ni naru</i> (DEFERENTIAL); <i>o-V-suru</i> (HUMBLE); <i>V-masu</i> (POLITE/FORMAL); <i>-yagaru</i> (DEPRECATORY)                                                                                             |
| Lexical devices (suppletive forms)            |                                                                                                                                                                                                                     |
| Pronouns                                      |                                                                                                                                                                                                                     |
| 1 <sup>st</sup> person ‘I’                    | <i>watakusi</i> , <i>watasi</i> , <i>atakusi</i> ; <i>boku</i> , <i>ore</i> , etc. + other nouns functionally interpreted, in interaction, as person deictics: e. g., <i>kotira</i> ‘over here.’                    |
| 2 <sup>nd</sup> person ‘you’                  | Name+title ( <i>Osibasama</i> ‘Mr Oshiba’; <i>otoosama</i> ‘dad’; (Name+) professional title: ((X)syatyoo ‘president (X)’), (Y)sensei ‘Prof./Dr. (Y)’; <i>anata/anta</i> , <i>kimi</i> , <i>omae</i> , <i>temee</i> |
| Nouns                                         | <i>baka</i> (DEROGATORY) ‘fool’; <i>kisya</i> (POLITE) ‘your company’                                                                                                                                               |
| Predicates: ‘to eat’ =                        | <i>taberu</i> (UNMARKED); <i>kuu</i> (INFORMAL/VULGAR); <i>itadaku</i> (HUMBLE); <i>mesiagaru</i> (DEFERENTIAL), etc.                                                                                               |
| Adverbials: ‘today’ =                         | <i>kyoo</i> (UNMARKED), <i>honzitu</i> (FORMAL)                                                                                                                                                                     |
| Sentence final particles                      | <i>zo</i> , <i>ze</i> (user: MEN), <i>wa</i> , <i>kasira</i> (user: WOMEN)                                                                                                                                          |

The tables only describe grammaticalized or lexicalized devices, that is, those linguistic devices most commonly – stereotypically – associated with social deixis, both in lay consciousness and in linguistic research, and do not include other strategies, such as choice of indirect speech acts or the like, which we observed can also have polite implications. Even within these limited parameters, however, it is clear that social deixis operates through multiple linguistic domains. Although honorifics constitute the “core” of studies on politeness, the field has progressively broadened the scope of analysis, and the increasing sophistication in the conceptual apparatus deployed in their study reveals a fascinating complexity in the mechanisms regulating their use and their meaning-making properties.

Sections 2 and 3 review accounts of social deixis in descriptive linguistics, socio-linguistics, and pragmatics, and provide a background for the description of an alternative approach in Sections 4 and 5, i.e. the “indexical view” which has emerged in more recent years.

## 2 Social deixis and subjectivity

While many early descriptive accounts of social deixis in Japanese are mostly concerned with formal taxonomies (cf. Wetzel 2004 for an overview), others focused on the syntactic behavior of social deictic forms within sentence structure. The theory of the Japanese sentence as a “multiply nested structure” referenced in the Introduction to this volume characterizes social deictics in terms of the position they occupy in the sentence: they are said to be commonly found outside of the proposition and in the modal part of a sentence, that which expresses the most subjective meanings. The study of subjectivity and its linguistic correlates provided a prolific analytical framework, generating much research based on structural but also functional analyses, from early sentence-level studies developing further into the study of discourse.

### 2.1 Insights from modality studies

Models such as Masuoka (1991, 1999) or Nitta (1991) describe the layered or nested structure of a Japanese sentence as containing a propositional “core” enveloped by a modal outer layer, where markers of different types of subjective meanings cluster. Masuoka (1991: 6, 29), like many others inspired by Lyons, takes “subjectivity” to refer to the feelings and opinions of an evaluating subject vis-à-vis certain facts or events. This includes a speaker’s evaluation of social facts such as the degree of formality of a situation or the rank of a participant, which are taken to be independent of truth conditions. The nested structure is graphically illustrated by Masuoka (2007: 16, gloss and translation by the current author) in the following way:

- (2) [Nee [dooyara [sakuya [hagesiku yuki ga huru] ta] yoo  
 hey it.seems last.night heavily snow NOM fall PST EVID  
 da] yo]  
 COP SFP  
 ‘Hey, it looks like it snowed pretty heavily last night!’

The level of politeness in the example above realized by the non-polite form of the copula *da*, appears indeed on the outside of the propositional core (*hagesiku yuki ga huru*), where speaker subjectivity is manifested. This theory also postulates that

the higher the degree of subjectivity the more peripheral the position a marker will occupy in the layers, and indeed the relative position of politeness markers – shown below from Masuoka's (1991: 44, 47–59) early model – indicates a relatively high degree of speaker subjectivity, only exceeded by sentence final particles, markers of speaker attitude.

proposition > modality of focus (e.g., the topic marker *wa*) > explanatory modality (e.g., the nominalizer *noda*) > modality of tense > modality of value judgment (i.e. deontic modality) > modality of truth judgment (i.e. epistemic modality) > modality of pattern of expression (i.e. sentence mood) > *modality of politeness* > modality of speech attitude (i.e. sentence final particles)

For Masuoka (2007: 6; 2009: 47) only addressee honorifics, i.e. *desu/masu* or plain forms, which have no lexical component, constitute the core of the modality of politeness. Referent honorifics (and other lexical deictic forms), in contrast, are considered to belong to the proposition, or the part of the sentence expressing facts or events perceived as “objective.”<sup>3</sup> Social deictics are therefore considered at times “propo-

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3 Strictly speaking, referent honorification – once we exclude suppletive honorifics, constituted by alternative lexical forms – can be realized by a contrastive pair of grammatical structures, i.e. respectively honorific and humble *o-V-ni-naru* and *o-V-suru* constructions, which would therefore in principle satisfy the “compositional subjectivity” condition.

- (i) *Sensei ga kooen de o-hanasi-ni-nar-u koto wa mettani*  
 professor NOM lecture LOC HON-speak-become-NPST NMLZ TOP rarely  
*na-i*  
 exist.NEG-NPST [+hon]  
 ‘The professor rarely gives lectures.’
- (ii) *Sensei o eki de o-miokuri su-ru koto wa mettani*  
 professor ACC station LOC HUM-see.off do<sub>HUM</sub>-NPST NMLZ TOP rarely  
*na-i*  
 exist.NEG-NPST [+hum]  
 ‘I rarely see the professor off at the station’

(Masuoka 2007: 68, current author's translation)

Nevertheless, Masuoka (2007: 61, 65) rejects the inclusion of referent honorification in the modal domain, due to the semantic-syntactic similarities between the category of spontaneity (*sizen hassei*) and the honorific “tag” *naru* (lit. to become) on one hand, and causativity (*yuuhatusei*) and the humble “tag” *suru* (lit. ‘do’) on the other, proposing that these honorific constructions constitute at best a pseudo-voice category. Like voice, honorific and humble referent honorifics are therefore considered part of the proposition.

- (iii) *[[sensei ga hanasu] naru] = [[event] happen]*  
 professor NOM speak become<sub>SPON</sub>
- (iv) *[nakamura ga [sensei o miokuru] suru] = [agent [event] cause]*  
 Nakamura NOM professor ACC see.off do<sub>CAUS</sub>

sitional,” at times “modal” (Masuoka 2007: 70), a distinction observed also in the accounts of Nitta (1991: 187)<sup>4</sup> and others<sup>5</sup>:

voice > *honorification* > aspect > polarity > tense > *politeness* > modality

However, this variance in classification is problematic, for two reasons. First, it is doubtful that the social evaluations governing the use of these two categories of deictics are qualitatively different. Secondly, it is hard to prove that the meanings of referent honorifics are invariant and “objective,” in view of common examples such as the following, from Okushi (1997: 187):

- (3) When Kazue’s older son, while sitting at the dining table, asks her if there is still cold tea in the refrigerator. Kazue (K) answers that there is and tells him to serve himself:

K: *Go-zibun de o-tori-ni-nat-te itadak-imas-u.* [laughs]  
 HON-self INS HON-take-become-GER receive<sub>HUM</sub>-POL-NPST  
 ‘(I) would request (you) to get it by yourself.’

Okushi argues that the honorifics in examples like this do not express “formality in the traditional sense” (1997: 162), but rather sarcasm, criticism or playfulness. Such meanings are, arguably, textbook examples of very subjective uses of the form.

Modality studies analyze ways in which a marker’s position, and its degree of subjectivity, correlate with various grammatical constraints (cf. Narrog 2009). As a descriptive criterion capable of characterizing the behavior of politeness modals in a sentence, subjectivity might seem to make a good candidate. However, subjectivity is not a sufficient criterion to characterize the syntactic behavior of “modality of politeness” as a whole, because it is a feature shared by other types of honorifics too, namely (predicate) referent honorifics (not to mention honorific pronouns or nouns) which are also arguably markers of subjective attitudes, but can appear in different sentential positions, not only the position of “modality of politeness.”

<sup>4</sup> Nitta notes that a sentence expresses “the world a speaker depicts with regards to the way in which s/he relates to reality” (*hanasite ga genzitu to no kakawari ni oite egakitotta hitotuno sekai*, Nitta 1991: 186). Although this definition would suggest that “objective” reality (problematic as this notion is) and the “expressed” reality are mediated by a very subjective cognitive representation plane, like Masuoka he considers only polite markers and a few other modal markers (such as expressions of volition/desire, epistemics, and sentence moods; Nitta 1991: 187–202) to be genuinely subjective grammatical categories signaling a speaker’s “expressed attitude” (*genpyoo taido*); the rest, including referent honorific forms, signal the speaker’s “expressed situation” (*genpyoo zitai*), which is said to refer to objective facts and events.

<sup>5</sup> See Narrog 2009: 42 for more examples of various examples of hesitation in the characterization of politeness in these and other scholars’ models, as well as historical reasons which may explain their idiosyncratic behavior.

The qualitative distinction between the two types of social deictics highlighted in modality studies and mentioned above – “honorification” and “politeness,” or referent and addressee honorification – is in fact not only characteristic of traditional accounts of honorifics (such as the works of the Japanese scholars Matsushita Daizaburo, Mikami Akira, and Watanabe Minoru, mentioned as predecessors by Masuoka 2007: 62), but also features in a seminal study in the generative approach, Harada (1976), which focuses purely on the syntactic behavior of honorifics. He labels these two types respectively “propositional” and “performative.” Propositional honorifics are said to be mainly dependent on the social status of the grammatical subject (or object) of a predicate, presumably marking facts unaffected by the speech event, which can just be “objectively” stated. Correspondingly, the referent of a propositional honorific (a person “Socially Superior to the Speaker”) is a referent whose role is taken for granted (that is, “given” or “presupposed”), and hence can be quite unproblematically “referred to” or described by a speaker as such. In contrast, performative honorifics are said to vary depending on the relation between speaker and addressee and, crucially, the situation of utterance, and hence are said to have a more eminently subjective function – the Austinian quality of performative utterances is indeed that they “perform” or “do” something, as opposed to just “stating” it. It is in this sense that he can argue that “at least propositional honorifications in Japanese are quite mechanical and automatic” (Harada 1976: 560).

Addressee honorifics have been shown to derive from referent honorifics through a diachronic process of progressive subjectification (Dasher 1995), i. e. a shift from the expression of event-oriented to addressee-oriented meanings (Narrog 2007). However, there is little evidence suggesting that referent honorification is more “stable” or context-independent than addressee honorification – in fact the opposite is probably true. Many studies provide evidence that referent honorification is rather dynamic (e. g., Cook 2013 and Section 4.1.2 here), and consideration of the addressee is likely to be a prime determinant for honorification of the referent (cf. Kumai 1988; F. Inoue 2017: 12, 127).<sup>6</sup> Even the seemingly “mechanical and automatic” syntactic transformations that arguably regulate honorification in Japanese are not entirely hard and fast rules, and Harada himself admitted that a great deal of (subjective) variability is observed in the actual application of these rules (Harada 1976: 519), not to mention variability in the very judgments governing speakers’ assessments of an addressee’s or a referent’s worthiness of honorification.

The syntactic specialization of linguistic forms indexically pointing to referents and/or to addressees may result in different distributional characteristics, but these differences do not reflect different degrees of stability or uniformity in the social eval-

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<sup>6</sup> That referent honorification is more “objective” is perhaps also somewhat counter-intuitive, if we think of it as a deictic sign which (unlike addressee honorifics and other deictics) does not even require the presence of a referent at the time of utterance and that therefore must rely heavily on the ideational, idealized, subjectively construed reality that the speaker intends to evoke.

uations that underpin the choice of honorific. Honorific forms, as indexicals, are vehicles of multiple types of evaluative meaning (as reflected in the various tags seen in Table 1 and Table 2: “deferential,” “polite,” etc.) and display various types of social and affective judgments (e. g., “polite,” “formal,” but also “sarcastic”), this variability being possible precisely because of their subjective nature. Subjectivity is however an indexical property shared by both addressee and referent honorifics. No matter how powerful social diktats about honorification of high status referents may be, they are challengeable and not “automatic” choices (cf. Pizziconi 2011), or no more so than addressee honorification. Also, both types of honorifics, not just addressee honorifics, are “performative” in that it is their very use that not only reflects but also evokes or creates, and maintains, the social dimensions of status and rank that constitute their deictic field. Analyses which focus on purely structural (positional) aspects fail to capture the common indexical nature of all honorifics, as well as the nature of the social processes that shape and maintain such indexicality, and are therefore rather limited heuristic tools in the analysis of a very social phenomenon.

## 2.2 Other perspectives on subjectivity and social deixis

A few other approaches, in very different ways, further problematize the concept of subjectivity in language and highlight important implications for a reconceptualization of social deixis.

Shoichi Iwasaki’s work zooms in on subjectivity in the Japanese language, (Iwasaki 1993: 7, 12) but adopts a functional rather than structural perspective, resulting in the inclusion of a much broader range of linguistic forms and devices in the category of social deictics compared to those analyzed in modality studies and opening up such analysis to elements beyond honorifics in the narrow sense. He characterizes honorifics as a class of deictics (on a par with spatial and epistemic deictics) that take the speaker as the center of evaluation and attitude. The evaluative attitude pertinent to social deixis is said to signal “social or psychological distance,” “respect,” or “politeness,” i. e. both social and affective meanings that are realized linguistically by means of the strategies of “exaltation” (treating others as higher status persons) or “humbling” (treating self as a lower status person). Explicit evaluative lexical elements (such as expletives, which he claims are scarce in Japanese) are excluded from his analysis, but based on his functional definition are included instead addressee honorifics and referent honorifics, kinship and other address terms, as well as other morpho-syntactic devices such as, for example, case particles (denoting, in Old Japanese, distance/respect or intimacy/disrespect), passivization, expressions of negative polarity, gratitude (i. e. benefactive auxiliaries), and regret (e. g., as realized in the *-te simau* construction). Subjectivity in this approach therefore represents the unifying trait of a quite heterogeneous class of sentence-level phenomena, and social deixis is a meaning resulting from a particular type of subjective evaluation.

Another scholar who uses the notion of subjectivity as a starting point, but goes beyond the boundaries of sentence-level phenomena is Senko K. Maynard (1993). In examining social deictics at the discourse level, Maynard (1993) uncovers numerous systematic functions that had hitherto been neglected. She defines “discourse modality” as “information that (...) conveys the speaker’s subjective emotional, mental or psychological attitude towards the message content, the speech act itself or towards his or her interlocutor in discourse [and] operates to define and to foreground certain ways of interpreting the propositional content in discourse” (Maynard 1993: 38). Under this approach, social deictics such as the addressee honorific suffixes *-desu/-masu* are an example of “discourse modality indicators.” Not unlike other approaches we have reviewed, they are taken to be genuinely “non-referential linguistic signs whose primary functions are to directly express personal attitude and feelings” (1993: 47), but from the vantage point of an analysis of discourse, crucially, Maynard notes that they do far more than express sociolinguistic styles, or an individual’s polite attitude, including among their functions the regulation of the exchange structure, discourse cohesion, and perspective.<sup>7</sup>

The following example from Maynard (1993: 162–163) illustrates one such case. This segment is from a work of fiction, and it involves two police prosecutors discussing the attitude of a suspect’s neighbor<sup>8</sup>. Note the shifts, as the turn progresses, in the (utterance-final) markers of speech level, underlined here. Given that the speaker addresses the same interlocutor, this variation is puzzling if one assumes speech level markers only to mark the relationship between speaker and hearer.

- (4) Context: prosecutor Y takes a turn in talking to prosecutor A.

*Kore to itte gen'in ni naru yoona de kigoto ga atta wake de wa nai to omoimasu ne.*  
‘I don’t think there was a specific reason that caused the incident.’

*Mosi omotedatta kenka demo siteireba, kitto Harue no kuti kara kinzyo ni hiro-matte-iru hazu desu kara.*

‘If they actually had a fight, that is sure to be known by the neighbors since Harue is certain to have spread that.’

*Tabun, Harue ni site mireba, zibun no doonenpai no onna ga hitoride syareta uti ni sunde, akanuketa minari de tuukin site-iru.*

<sup>7</sup> This refers to a viewpoint in the literary sense, such as for example the “here and now” enabled by the *-da* form(s) vs. the “removed” perspective enabled by *-desu/-masu* forms, somewhat external to the narrative.

<sup>8</sup> I maintain Maynard’s translations, but modify her romanization to conform to the style used in this volume and omit the literal glosses due to considerations of space.



‘Perhaps for Harue, (it was upsetting to see that) a woman about the same age as herself lives in a stylish house and goes to work wearing fashionable clothes ...’

... *tokitama gaisya de okurarete kaette-kuru* ...

‘... and sometimes the woman is driven back home in a foreign car.’

... *soo iu hadena kurasi ga netamasikatta to yuu koto zya-nai n desyoo ka.*

‘... isn’t it that Harue was jealous of such a showy life style?’

Maynard’s argument is that the whole turn is internally organized by Y in a way which resembles utterance-internal information structuring. She notes the principle that *desu/masu* forms do not normally appear in subordinate clauses (because “subordinate clauses normally<sup>9</sup> do not carry interpersonal features” 1993: 163), but instead appear in utterance-final predicate position. This syntactic principle (cf. Martin 1964: 1026–1027) seems to be mirrored in larger units such as this turn, in which information construed as subordinate to the main point is marked by a shift to the plain style. So this shift has nothing to do with a shift in attitude toward the hearer, but signals that the information contained in the two plain style utterances is to be understood as a sort of modifier of the last conclusive utterance, marked like the initial ones in *-desu/-masu* style.

Maynard’s analysis eminently illustrates how subjectivity not only affects intra-sentential structure (as in the mainstream modality studies before) but manifests itself systematically at a supra-sentential level as well, and suggests once again that subjectivity does not circumscribe a discrete grammatical category and is a very pervasive feature of linguistic phenomena. It also raises two other important observations: first, that the so-called socially deictic function is only one of the possible effects generated by these markers, another one of which – discourse management – has arguably little to do with “social” deixis in a narrow sense; secondly, and even more importantly, it suggests that the discourse-structuring effect is not an inherent meaning of these markers, semantically or otherwise coded in the markers, but is instead an emergent contextual effect. Maynard argues that the discourse-structuring function is recognized by speakers on the basis of their knowledge of other more prominent functions – for example, the knowledge that *-desu* typically marks ‘other-directed talk’ and *-da* does not – but is far less transparent or salient, and speakers are unlikely to have a metalinguistic awareness of it. The final point to note here is that some meanings are more prominent and hence more accessible than others in speakers’ awareness, and more amenable to verbalization and/or reflection. Thus when speakers are asked to describe the meaning of a form, they are more likely to

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<sup>9</sup> The qualification “normally” is telling. This too is not a hard and fast rule, but a norm of usage which can be flouted for specific stylistic effects, such as for example the construction of a formal register (Makino 2002; see also Nitta 1991: 189).

resort to stereotypes based on the typifications they are most aware of, rather than offer accurate accounts of their usage.

The last study I wish to mention here, that by Minami (1987), unlike the former two, does not explicitly set out to discuss the notion of subjectivity itself, and yet it effectively provides an account of what the subjective nature of deictics may involve at a level that could be defined as sociocognitive. According to Minami, three common traits are shared by both honorifics in a narrow sense (i. e. the set of grammaticalized markers) and other interactionally sensitive expressions. These are (a) the existence of a *concern or consideration* (顧慮 *koryo* ‘focused attention’) toward certain objects, such as the speaker and hearer themselves, the topic of conversation, or the setting; (b) an *evaluative attitude* toward the object of such consideration, and (c) a repertoire of linguistic expressions in oppositional relationships, indexing (among other things) specific affective and social distinctions. A conventionalized system of signs (c) is naturally a condition for the speaker’s cognitive/affective stance ((a) and (b)) to be recognized, but there is huge variation in the degree to which such stance signals are conventionalized and in their individual scope, as will be shown below. Minami sets out to describe the plethora of linguistic resources recognized by users as expressions of an evaluative attitude in the domain of social relations, but in spite of its remarkable length, the list is arguably not even exhaustive. The subcategory of ‘verbal resources’ alone includes the following (Minami 1987: 17–26, Pizziconi 2004b: 287–292): not only honorifics proper (deferential, humble, and polite forms, i. e. addressee or referent honorifics, “beautification” forms, derogatory and arrogant forms) and titles, but also interjections, phrase-final particles, style (colloquial vs. written), speech act contrasts, sentence length and completeness, direct vs. vague expressions, prefaced vs. abrupt expressions, discourse structure, casual vs. deliberate pronunciation, script type (e. g., the contrastive use of romanized, *kana*, and *kanji* orthography), standard vs. dialectal varieties, and even utterance vs. avoidance of communication. In the subcategory of ‘non-verbal devices’ (Minami 1987: 27–30; Pizziconi 2004b: 292–293), we find paralinguistic signs such as voice quality, facial expression, eye movement, body posture, proxemics, the choice of medium of conversation (e. g., face-to-face vs. phone or other messenger-mediated communication), handwriting vs. typing, the choice of various writing instruments, materials, and media, clothing (the choice and use thereof), and other non-paraverbal behaviors, manners, and behavioral norms. What this eclectic list makes clear is that effectively *any* communicative behavior can be and is effectively borrowed to signal particular features of the speaker’s “concern/consideration” and “evaluative attitude” – e. g., their deferential or distancing attitude. Consequently, any communicative sign is, at least potentially, indexical of some social meaning. Although Minami does not elaborate on this, his observation provides further evidence for a critique of the coding view: that social deictic meanings are encoded in all the forms in this list is clearly difficult to maintain, which leads once again to the conclusion that politeness effects are at best emergent, that is constituted in and through context.

As this cursory overview has shown, subjectivity is a relevant and crucial feature of social deictics precisely because of their deictic nature, i.e. their pivoting on the speaker's assessment of some social or affective dimension whose identification is dependent on various conditions at the time of utterance. Although modality and other studies have been able to show that subjectivity is to some extent responsible for the positional features and syntactic properties of these forms, because subjectivity affects a huge domain of linguistic and non-linguistic activity and is associated to the speaker's reflexive ability to construe and extract indexical meanings from a vast variety of signs, it does not constitute a robust criterion to circumscribe specific phenomena. Critics of the layered model have noted that subjectivity can be observed also in elements which do not occupy peripheral positions, and that the distinction of some honorifics as propositional and others as performative is untenable when subjective evaluations are used as a defining criterion. Approaches that take as their starting point the functions of subjectivity end up producing long lists of formal correlates which can include pretty much everything.

Speakers are never merely speakers – they are speakers with an attitude, which manifests itself at different levels. Speakers manipulate language phonologically, lexically, or by means of different grammatical constructions in order to express affective and social meanings. If subjectivity is not a syntactically-governed, discriminating feature of social deictics, if it is pervasive in natural language and it cannot usefully delimit a field of enquiry, it is not a particularly useful heuristic. The linguistic category commonly referred to as “social deictics” shares with many other linguistic and non-linguistic signs the feature of indexing a speaker's concern with, or consideration of, some object, and of his/her evaluative attitude toward that object. The only eligible criteria to define the category of “social deictics” must therefore be the particular nature of such evaluations, i.e. significant social meanings regularly associated with these forms, and some mechanism which permits this association by anchoring these forms to some aspects of the speech event, as will be discussed in Section 4 below.

### **3 Accounts of social deictics in sociolinguistic and pragmatic approaches**

#### **3.1 The nature of the social context**

Other approaches which purport to account for the functional uses of deictics take social context as a starting point. They generally conceptualize context in terms of canonical sociological categories such as status, rank or social structures, but in most studies we also find inevitable reference to the speaker's affective attitudes. Even in the studies reviewed so far, the functions of deictics were characterized in terms of

either social (e. g., indexing of rank) or affective (e. g., polite, arrogant) effects. These should not, however, be seen as mutually exclusive or even independent meanings. Contemporary philosophical analyses, for example Bourdieu's theorizing on the *habitus*, articulate this relationship by noting that our thoughts and behavior are not products of unbridled agency (here read "affect") but are conditioned by socialized norms, which are internalized rather than deterministically or mechanically constraining (Bourdieu 1990: 54). "Affect" and "society," or the "intrapersonal" and the "extrapersonal" mutually impact each other in that our perceptions and dispositions are shaped by past social practices, and these practices in turn can be shaped by constantly changing dispositions, sensibilities, etc. (cf. Strauss and Quinn 1997: 3–11).

Such interdependence is well illustrated (though not presented in a full-fledged theory of social practice) in the work on *keigo* by Kikuchi (1997). He considers *keigo* as forms endowed with both social and affective functions (1997: 42–88). Social factors are analyzed in terms of settings (configurations of addressees and bystanders), referents, and webs of personal relationships – including vertical relationships (*zyooge kankei*), relationships of obligation (*onkei no zyuzyu*), horizontal relationships of relative familiarity (*sinso kankei*) and in-group/out-group relationships (*uti/soto no kankei*). Affective factors relate to expressive intentions, i. e. whether to defer or not to status, or whether to speak sarcastically, confrontationally, tongue-in-cheek, etc. These affective dispositions too, however, do not operate in abstract; they take as their starting point the speaker's willingness (or unwillingness) to abide by socially dictated norms, and social norms are therefore a necessary reference point for such judgments. Early accounts of the Japanese honorific system (*keigo*) defined it primarily as the expression of a deferential attitude (*keii*) based on a literal – if reductive – reading of the character *kei* (respect, deference).<sup>10</sup> However, such attitudes do not need to be sincere, nor is behavior rigidly determined by social norms: Kikuchi points out that the employee who uses *keigo* to his/her superiors does not necessarily do so out of a genuine sense of polite respect, but in deference to the social convention regulating behavior in the company and, by implication, that s/he also has the choice not to defer to that convention. The point is important: social normativity is not deterministically brought to bear, and the social deictic system is a resource creatively exploited by users, endowed with a potential to challenge the status quo (Kikuchi 1997: 57–58). Personality, ideology, or education (1997: 73) are responsible for the subjective evaluation of social norms and the choice between conforming to them or disregarding them. This insightful observation has, however, not always been paid heed to in sociolinguistic works, which have striven instead to isolate specific social

<sup>10</sup> See for example the definition in Kindaichi et al. (eds.) (1990: 615), which notes that "[*keigo no mottomo kihontekina kinoo wa 'keii' aruiwa teineisa o arawasu koto da to itte ii dearoo*" ('it is arguably correct to say that the most fundamental function of *keigo* is the expression of a "deferential intention" or politeness').

dimensions thought to determine the use of social deictics. In spite of the close interplay between affective states and social conventions, distinguishing them conceptually may be preferable in accounts of the metalinguistic awareness of speakers, as depending on the context one or the other variable may have a more prominent role and one or the other meaning may become more salient; nevertheless, their latent overlapping allows us to appreciate the formidable dynamism and expressive potential of these expressions.

### 3.2 What counts as a social variable

An early article by Martin (1964: 410) noted at least four social factors that could affect speaker choice of speech levels: age, sex, position, and group membership, and all these variables have received much attention in the literature. Probably no single one has received more attention than gender, an area of scholarship that has grown even more dramatically with the advent of feminist studies. The discussion of the gendered connotations of social deixis – one of the social meanings allegedly conveyed by deictics – exemplifies certain other important features of deictic markers relevant to the re-theorization to be presented in Sections 4 and 5.

Typical findings from linguistic studies on gender note that there are distinct gendered preferences in various domains of use (see Endo 1991, S. Ide and McGloin 1991, Okamoto 1997 on sentence final particles; Hori 1986, Okamoto 1997 on honorific verbs; Shibamoto 1991 on the ellipsis of subject and topic NP particles *wa* and *ga*; Kanemaru 1993, S. Ide 1991, Ozaki 2001, Takahashi 2009, and the more critical Endo 2001, on personal pronouns). In spite of the bias occasionally generated by problematic sampling (e. g., comparing male informants in employment vs. female housewives) or the nature of the data elicited (e. g., actual vs. reported data), a common observation is that women are more likely to employ honorific forms than men (including women in powerful positions, Takano 2005: 645), a fact frequently explained in terms of their lower social status or weaker social power. “Gender” however appears to be too coarse a category, one that fails to define a homogenous set of behaviors. Studies that look at intragroup variation, for example, note indeed that younger Japanese females appear to use less honorifics than older ones (e. g., Endo 1999: 110). This supports the view that honorific usage is not affected simplistically by the speaker’s sex (cf. Martin 1964: 411, S. Ide et al. 1986) nor their gender, but rather by sociohistorically specific ideologies around social status or role-relationships (R. Ide and Terada 1998; M. Inoue 1994; Endo 1991, 2006; and several contributions in Okamoto and Shibamoto Smith 2004), which constitute a different type of subjective social orientation. Targeting further the question of ideologies, some studies have also looked at how female speakers respond to the expressive dilemma they face when operating in social contexts formerly precluded to them (Takano 2005; Smith 1992). One of the strategies that appear to significantly differentiate gender groups in Takano’s study of “powerful women

in charge” for example is the usage of “supportive moves,” either before or after the head act (Takano 2005: 646), illustrated in the examples below. The more frequent use of these moves by female than male speakers is statistically significant.

- (5) Grounder (mainly used in giving reasons for a directive):

*Kore, watasi mo zisin na-i kara ne, yoku*  
 this I too confidence have.NEG-NPST because SFP well  
*mi-te.*

look.at-GER

‘Because I am not sure either about [which one we decided on last time], look at it carefully.’

- (6) Apologetics (apologizing for bothering the addressee):

*Waru-i kedo, denki no suittiosite-kure-ru?*  
 be.bad-NPST but, light GEN switch press-give.me-NPST  
 ‘I’m sorry [to ask], can you press the light switch for me?’

However, although the glossing of this variable as “gender” rather than “sex” in the literature suggests an implicit recognition of its socially constructed nature, by and large (Takano above being an exception), studies on gendered language also appear to conceptualize social roles and their relation to language use quite statically, generating the assumption that ascribed social roles deterministically predict the language associated with them. This assumption is problematic in two respects. The first is that it causes the unwarranted “treatment of a particular social category as an independent variable,” rather than as a social identity strategically construed. The second is that it misleadingly suggests a “direct mapping of a linguistic form to a particular feature of the social context” (Okamoto 1997: 808). Both points are extremely significant with respect to the question of how social deictics “function,” and I will next illustrate them further by looking at personal pronouns, introducing some features of deixis that will be developed further in Sections 4 and 5.

### 3.3 The mapping of social meanings to linguistic forms

In Japanese, pronouns are generally discussed not only as a system of person deixis, but commonly singled out as a prototypical example of rich social deixis (Martin 1975: 1075; Shibatani 1990, 1999; Kikuchi 1997: 100; Whitman 1999; Yamamoto 2006: 108; Nariyama 2003; Ikegami 2008). They exhibit a syntactic behavior strikingly different from those of many European languages and importantly, since Japanese allows omission of a predicate’s arguments when these can be inferred from context, the explicit use of pronouns is saturated with meanings that go beyond pronominal reference (Ono and Thompson 2003). Their large inventory can index extensive and

nuanced social connotations (Kurokawa 1972; S. Ide 1991: 73; Sturtz Sreetharan 2009; Suzuki 1975; Martin 1975; Shibamoto Smith 2003; Ishiyama 2008), as exemplified in the following table, listing only some of the terms for first person reference.<sup>11</sup>

**Table 3:** (Some) standard Japanese pronouns for first person and commonly cited social indexical meaning (U=utterance)

| Pronoun         | Interactional Schema | “Interpretation” (with additional connotations)                                                                                  |
|-----------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <i>watakusi</i> | Speaker of U         | neutral (S=woman); honorable/humble (unique interpretation when S=man/boy, alternative when S=woman/girl), formal, polite, stiff |
| <i>watasi</i>   | Speaker of U         | neutral (S=woman, girl, non-young man), equal (S=woman, girl), standard, formal (S=male)                                         |
| <i>atasi</i>    | Speaker of U         | neutral, equal (S=woman, girl), plain (S=female), feminine                                                                       |
| <i>boku</i>     | Speaker of U         | neutral (S=boy), equal (S=man), plain (S=male), masculine, relatively informal, mid-level formality (male-male interactions)     |
| <i>ore</i>      | Speaker of U         | pejorative/equal (S=man, boy), masculine, mid-level formality (male-female interactions) manly, rough, rude, deprecatory, vulgar |

All lexemes outline a specific participation structure, called by Agha (2007: 278) a “pattern of participant deixis”; in the case of the lexemes above, this indexes the referent as first person/speaker. Other meanings (often called “connotations”) are derived from the contrastive relationship across lexemes, and the “interpretations” (Voegelin et al. 1977) listed in the column on the right illustrate some of the common accounts found in the literature. However, it is important to note that these “interpretations” are no more than (stereo)typical characterizations of their effects, referring for example to features of the setting (e.g., formal) or stylistic nuances (e.g., stiff, vulgar). Such typifications, crucially, are not uniform across society, hold true for some speakers but not others, or apply to some contexts but not others. Some of these characterizations refer to user features (e.g., man/boy/woman/girl speaker), but even these do not have constant “values,” and the same pronoun indexes different meanings when uttered by different speakers. For example, *watakusi* is considered by some

<sup>11</sup> This list is based on Voegelin et al. 1977, but the “connotations” are reported from other sources as well: Martin 1975: 1076; S. Ide 1991; Ishiyama 2008; Shibamoto Smith 2003. S. Ide (1991) adds *atakusi* and *atasi* to the female repertoire as “variants of a social dialect”; Voegelin et al. (1977) adds *wasi* and ‘zero’ pronouns. Martin (1975: 1075) lists all of the above and *kotira*, *kotti*, *kottya*, *uti*, *zibun*, and many others.



to be a “neutral” pronoun for women, but “deferential”<sup>12</sup> or “formal” for men. Such a bountiful list of characterizations does not even account for further possible indexical meanings such as regional variety or class (Sunaoshi 2004; Takahashi 2009), or sexual orientation (Abe 2004). What this complexity suggests is that the extraordinary amount of social information that is potentially indexed by such forms can be captured only minimally by sociolinguistic theorizing that attempts to link them linearly or simplistically to a few social variables such as gender or age or culture-specific parameters such as *uti/soto* or, for that matter, any simple cluster of sociological factors. The table highlights instead how the indexical meanings involved are (meta) pragmatically rich and have a non-trivially broad range. These rich connotations are part of a speaker’s sociocultural competence, and knowledge of these connotations would be dependent first of all on the speaker’s experience of various social contexts of use and various speech registers: as F. Inoue (2017: 7) points out, “veteran” older generations are generally more confident in their use of such forms, and conversely pre-school children are not expected to command more than a few formulaic forms. As well as experience, the speakers’ own ideologies of use (e.g., whether women should or should not speak “politely,” what constitutes an “appropriate” degree of formality, etc.) are also responsible for considerable variation in interpretation and usage across social groups.

It should also be noted that so-called “deviations” from these typical categorizations are not hard to come by and have been systematically observed: for example, commenting about the use of *boku*, Martin (1975: 1076) notes that “for years it has carried a masculine aura that is still strong, though it is now said to be in use among college girls.” More recent studies, rejecting stereotypical and deterministic associations of gender and linguistic forms, look at deviations as the ideologically informed, subversive construction of different identities (Endo et al. 1989; Endo 2001; Okamoto and Sato 1992; Okamoto 1994, 1997; and several papers in Okamoto and Shibamoto Smith 2004). This dynamic exploitation is possible because pronouns are parts of speech registers which form stereotypical models of behavior recognized (though not necessarily uniformly subscribed to) by users, who invoke such models, and creatively trope on them during communicative acts (that is, use them as departure points), in order to generate both stereotypical meanings as well as novel ones.

In conclusion, sociolinguistic studies attempt to isolate some of the social meanings indexed by social deictics, such as “feminine” or “formal,” linking them to social categories or settings, or widely recognized registers of use, but neither their use nor their interpretation can be said to be invariable across social groups. The soci-

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<sup>12</sup> Note that the qualification of “deferential” for a first person pronoun – which does not by definition predicate any feature of the hearer – is at best an indirect, emergent, effect of the speaker’s adopting a formal stance through the use of this and other congruent signs. See the discussion in Section 4 on this issue.



olinguistic approach has been criticized for validating essentialist readings of their meaning, because it neglected to appreciate their ideological nature, and sociohistorical specificity. This tendency to stereotype is evident in lay discourse (“*boku* is only used by boys”), but such stereotypifications have often been adopted unproblematically in linguistic research as well. Another aspect that has been criticized is that such simplistic descriptions conflate different types of indexicality: we saw how features characterizing the user him/herself (e.g., speaker gender), those characterizing their affective stances (e.g., polite, stiff, rude), or the setting as a whole (e.g., a formal context), have been commonly lumped together. However, these are different kinds of meanings that are generated by different indexical mechanisms, and examining the workings of social deictics requires disentangling them again.

### 3.4 Pragmatic approaches

While sociolinguistic studies have highlighted the linguistic correlates of some canonical sociological categories (age, gender, etc.) assumed to be relatively stable, pragmatic studies have zoomed in on the linguistic correlates of more changeable, fleeting dimensions of the context, i.e. relations of power or distance (henceforth P and D) between speakers in specific speech events. The single most influential pragmatic study of social deixis is arguably the seminal work of Brown and Levinson (1987), which provided a reference frame for the study of politeness for nearly a quarter of a century, and provoked an intriguing debate, stirred by the response of Japanese scholars, regarding the issue of universality vs. culture-specificity of politeness devices.

For Brown and Levinson honorification is just one of many polite strategies available to speakers, all of which they argue can be predicted by a single calculation involving three, universal, dimensions: P, D, and a variable accounting for the specific cultural value of an act (Brown and Levinson 1987: 76). Most of the strategies they describe beyond honorifics can of course be found in Japanese as well, for example “indirectness” and “non-coerciveness” in our example (1), but Japanese scholars took issue with their assertion that speakers select one or the other strategy rationally, or rather based on individual “volition.” This assumption was taken to be ill-suited to the Japanese sociocultural context and the functioning of Japanese *keigo*, and rather derived from an ethnocentric bias, reflecting a Western “individualist” understanding of language use (cf. Pizziconi 2003, 2011 for a review). Rather than individual(istic) freedom of choice, the Japanese scholarship put the spotlight instead on far less negotiable sociopragmatic requirements to abide by social norms. S. Ide explicitly called for a redefinition of politeness to include a notion of conformity to the “expected and/or prescribed norms of speech appropriate to the contextual situation in individual speech communities” (The following examples are from S. Ide 1989: 225; glosses by the current author).

- (7) *Sensei wa kore o yon-da.*  
 professor TOP this ACC read-PST.  
 ‘The professor read this.’
- (8) *Sensei wa kore o o-yomi-ni-nat-ta.*  
 professor TOP this ACC HON-read-DAT-become-PST  
 ‘The professor read this.’

Taking issue with Brown and Levinson’s emphasis on “volitionality,” S. Ide maintained that the plain utterance in (7) is not acceptable because “the social rules of Japanese society require one to be polite to a high status person like a professor. This use of an honorific form is the socio-pragmatic equivalent of grammatical concord, and may thus be termed socio-pragmatic concord” (S. Ide 1989: 227). Several parts of this statement are of course problematic, such as that there is a single norm for the whole of Japanese society, or that the socio-pragmatic concord is as stable as grammar rules (which are also not invariant), but S. Ide’s observations were important as they attributed to social context, and not intrapersonal states, a primary role in the regulation of the speaker’s linguistic choices.

In retrospect, the clash between the universalist approach of Brown and Levinson and various relativist approaches, including those adopted by Japanese scholars, had more to do with their respective ontologies (Brown and Levinson effectively providing a description of linguistic devices, S. Ide focusing on the social significance of *keigo*), but the debate had the merit of refocusing attention on the social rather than abstract pragmatic aspects of social deixis. To avoid the pitfalls of essentialization and stereotypification, however, a more nuanced notion of social context needs to focus on sociohistorically specific contexts and on the ideological disputes underpinning honorific use, not assuming homogeneity, but taking into account social struggles.

Brown and Levinson’s work maintains an understanding of honorifics that has been repeatedly flagged in this chapter as problematic, especially for its reductive claim that honorifics are “direct grammatical encodings of relative social status between participants, or between participants and persons or things referred to in the communicative event” (Brown and Levinson 1987: 276). If we consider the use of pronouns and other phenomena illustrated in the previous section, it seems uncontroversial that many of their pragmatic effects can be explained by the parameters of P or D. The use of a “formal” pronoun could, for example, deictically mark a relationship of relative psychological distance between the interlocutors, that of a “humble” pronoun could mark a power differential. But it is hard to see how a marker could do this in the absence of other elements in the speech situation that concomitantly support such an interpretation. The example in (3) illustrates precisely the point that for a humble honorific to convey the meaning of “humbleness” rather than “sarcasm,” other contextual conditions must also apply (in the case of (3), that the addressee is actually in a position of power over the speaker). Honorifics and polite strategies do

not convey meanings in isolation. Each honorific element participates as a component of larger textual configurations, which are often recognized as distinct registers, such as the service *keigo* register of example (1), and a deferential meaning is only obtained if all elements, co-textual and contextual, consistently converge toward a deferential effect. Dissonances in such constitutive components of the situated utterance may impart a different significance to specific elements (e.g., sarcasm rather than genuine formality). The resulting meanings are therefore *emergent*, derived in context and valid only in those contexts, rather than coded and invariant. In addition to this, and relatively neglected in pragmatic frameworks, there is the question of subjectivity in how evaluations are made: the connotation of a personal pronoun as, for example, “vulgar” (e.g., *ore* in Table 3) is clearly dependent on subjective metapragmatic evaluations that are the result of a user’s own ideological positioning, rather than universally shared social conventions. And finally, while Brown and Levinson could explain gender-based differences in the “default” use of pronouns (e.g., *watasi* for women and *boku* for men) on the basis of the existence of gender-based power differentials, the fact that a variant comes to be commonly associated with the female gender *regardless* of who she is talking to (that is, either a [-P] or [+P] interlocutor), shows the involvement of a different kind of indexicality, one that confers connotations of personhood. Rather than forcing meanings such as “feminine” into the semantics of the pronoun, these should be seen as enregistered connotations that take a (theoretically gender-independent) normalized use as their starting point (e.g., the use of “formal” pronouns by [-P] users addressing [+P] users), are then regularly “adopted” by some users (e.g., females speakers, who typically occupy a [-P] position in female-male speaker pairs), and come, in time, to be emblematic of their gender in other contexts as well (see Agha 2007: 278 for a detailed account of such processes).

Brown and Levinson’s framework, like other pragmatic frameworks, may explain the etymological trajectory of certain linguistic forms under the pressure of social forces, but by assuming a static and invariable correspondence of (honorific) forms and (honorific) meanings it leaves important mechanisms of interpretation unaccounted for, neglecting their indexical significance, the various types of indexicality involved, and the different valorization of these forms by different “types” of users (Agha 2007: 15–16, 316). Japanese scholarship offered important critiques, early on countering Brown and Levinson’s “rational” model by highlighting the importance of social constraints on the selection of honorific forms, although in doing so it tended to exaggerate the alleged consensus around particular uses and neglected to stress the social struggle over norms. Later critiques showed how the meanings conveyed by honorific forms are much more dynamic than Brown and Levinson’s “coding” model assumed and illustrated the extensive range of expressive possibilities of honorific forms as indexical forms (Cook 1999, 2013; Okamoto 1997; Pizziconi 2011).

## 4 Problematizing social deixis and indexicality

In view of the critiques presented above of reductionistic and static notions of social context and of the notion of a direct encoding of social meanings in linguistic forms, this section revisits the properties of social deictics from the viewpoint of their indexical characteristics (see also Pizziconi and Christie 2017 on indexicality and its relation to the issue of politeness). The two components of the term “social deixis” will be revisited here, starting from the mechanisms that organize deixis and then moving on to some observations about its social nature.

### 4.1 The deictic properties of social deixis

Indexicality appears to be a ubiquitous feature of language (see Agha 2007: 84 on referring as a “mode of social semiosis”), but deictics constitute a special case of indexicals in that they provide constraints on interpretation; by definition, they force users to focus their attention on a certain set of contextual variables, relevant at the time of utterance, which provide information that fills up, as it were, otherwise semantically deficient expressions. A criticism of the “coding” view was presented earlier based on the observation that meanings should be seen as emerging from the context itself, but if interpretation cannot be resolved without a context that specifies the descriptive content of these forms, what exactly is the information conveyed by the deictic forms themselves?

#### 4.1.1 The participation schema

For the moment, to deal with a less elusive concept than that of “social” deixis, to which I will return shortly, let us consider an example based on person deixis, in particular the first person pronoun *boku* presented earlier in Table 3. As shown in this table, this pronoun indexes a particular participation structure that marks the referent as the person momentarily occupying the role of “speaker of the utterance.” This is the minimal amount of information, or in the framework of Agha (2007: 46–48) the minimal schema of interpretation, a baseline sketch of referent characteristics, provided by this deictic form. Such a schematic representation of role relations enables the disambiguation in situated contexts of use of a semantically underspecified form, by “pointing” to the referent occupying a specific role in the speech event, here the “speaker of utterance.” Although this schema is a representation of a default interpretive process, we find cases in which it gets modified. These cases are important in that they highlight the social nature of interpretive processes involving deictic properties.

It has been noted that in some contexts, typically in “motherese” registers, the first person pronoun *boku* can be used for second person reference (Martin 1975: 1076; Suzuki 1975: 50; Clancy 1985: 454; Whitman 1999):

(9) *Boku tabe-ru?*

I eat-NPST

‘Will (you) eat (something)?’

This “transposition” of meaning (I > you) shows a dramatic alteration in the conventional schema of interpretation that we said is the indexical feature of this deictic. In this case, this is made possible by the fact that the pronoun can behave in a way more similar to a noun (or possibly a proper name, since it can, for example, take the suffix *-tyan*, a term of address used for a child). This semanticization gives *boku* the meaning of “the little one in the family,” a non-deictic, referential<sup>13</sup> use, which next makes possible its use in address with the sense of “you, *the one called/who refers to self as boku*.” The italicized clause is not inherently conveyed by the use of the second person pronoun, but is the result of pragmatic inferencing, emergent processes of interpretation, and entrenchment of a recursive inference which are not permanent across all contexts of use and still necessitate a particular context – e.g., mother-child interaction – for this particular effect to be obtained. A stable context of use, i.e. mother-child interactions, enabled the first person pronoun to become enregistered, that is, routinely recognized, as a noun or proper name-like form; once *boku* has become enregistered it loses its original deictic meaning “I” and can be reasigned a new one: “you.”<sup>14</sup> Outside of this specific context, the use of *boku* would be interpreted as first person by default. However, the pronoun could convey additional effects, if the interlocutors can recognize motherese: for example, a speaker using *boku* to address an adult could suggest a mocking or even offensive intention – hinging on the knowledge that a child and not an adult is the default referent of that term. The resulting emergent meaning of “childish” is thus not built into the pronoun, but is recognizable on the basis of the speakers’ social knowledge of registers of use, and the particular configuration of participants in that speech event.

The pronominal system illustrates two types of indexicality. The first is a *pattern of participant deixis*, a definitional feature of deictic forms, but one that can be mod-

<sup>13</sup> It is prototypically non-deictic in the sense that it no longer hinges on the speaker as anchoring point, but it is of course context-dependent with regards to the anchoring point of ‘the family.’

<sup>14</sup> This is possibly particularly easy in Japanese, where some kinship terms can be used rather loosely for first, second, or third person reference (Ishiyama 2008: 116–117); however, as observed by Suzuki (1975: 48) kinship terms can be used for address (i.e. shift from third to second pronominal usage) only toward members of the family occupying positions higher than that of the speaker so *boku* must be seen as an exceptional case of first to second pronoun shift, possible only in the particular register discussed here.

ified, as in the shift from first to second person denotation. The second has to do with indices of *personhood*, e. g., the capacity of forms to come to index (among other things) gender, a feature which is, though not deictic, also capable of being modified, as for example when a gay male speaker adopts *watasi* or *atasi*, stereotypically associated with female speakers, for self-reference (Lunsing and Maree 2004: 97). Both cases illustrate how indexical meanings can be creatively re-interpreted, and are therefore amenable to extension, thereby generating different orders of indexicality (Silverstein 2003).

#### 4.1.2 The schema of deference orientation

A consideration of other forms reveals clearly yet another significant type of deictic property, a *schema of deference orientation*. Alongside the pattern of participant deixis, such forms carry information regarding a schema of deference, one that denotes whether a participant is the target (“focus”) or the source (“*origo*”) of the projection of deference to other participants, as indicated in the rightmost column of Table 4.

**Table 4:** Default suppletive forms of the verb ‘to eat’

| Denotation                 |               | Interactional indexing       |                              |
|----------------------------|---------------|------------------------------|------------------------------|
| <i>Lexeme</i> : ‘to eat’   |               | <i>Interactional role</i>    | <i>Deferential role</i>      |
|                            |               | (grammatical subject is ...) | (grammatical subject is ...) |
| <i>mesiagaru</i><br>[+DEF] | verb, +active | – speaker                    | focus of deference           |
| <i>taberu</i>              | verb, +active | ± speaker                    | undetermined                 |
| <i>itadaku</i><br>[+HUM]   | verb, +active | ± speaker                    | <i>origo</i> of deference    |

These schemas entail a reorganization of sets of linguistic forms commonly referred to as non-honorific (*taberu*) and “subject/object” or “deferential/humble” honorifics (*mesiagaru/itadaku*). Such traditional labels notably conflate syntactic and pragmatic information, as in saying, for example, “deferential/subject honorifics express the speaker’s deferential attitude towards the grammatical subject of the sentence.” It is useful instead to maintain a distinction and observe two separate schemas, thus allowing us to focus on how the deference schema itself operates, independently from other features of the deictics. As noted earlier, deferential meaning is not a unique effect invariably present when these forms are used, and therefore “coded” in the forms themselves, but a *default* indexical effect obtained in the absence of other con-

trasting or contradicting signs (Agha 2007: 316). The *default* effect is no more than a stereotypical interpretation of recurrent indexical associations, but when a constellation of signs (in an utterance or other semiotic act) is incongruous, i. e. when signification does not converge toward a homogenous effect, the “default” reading of a form is altered. In a way similar to example (3) presented earlier, for example, in (10) a daughter is treated as the focus of deference by her father, an attitude which can be seen as incongruous as it does not conform to common sense notions about how discourse is conducted within the family (example from Cook 1999: 92).

- (10) Father: *Otoohu no omisosiru ga sukosi*  
                   *tofu GEN miso.soup NOM a.little*  
                   *nokot-tei-mas-u yo.*  
                   remain-RES-POL-NPST SFP  
                   ‘There is still some tofu miso soup left (in your soup bowl).’  
       Child: *Ir-ana-i*  
                   need-NEG-NPST  
                   ‘(I) don’t want (lit., need) (it).’

The incongruity in (10) between the deferential schema thus outlined and the situational context (father-daughter relationship) – the contrast, in other words, between linguistic forms that routinely index non-intimacy (*-masu* in this example) and the interlocutors’ actual intimate relationship – becomes evident based on common knowledge about the social status of parents vs. their children. This forces alternative readings here: either one of deliberate “criticism” or “sarcasm” as we saw in (3), or a shift in the role played by the social persona “father” from that of a kinsperson to a “teacher of social rules of behavior” (Cook 1999: 94), meanings that override the reading of genuine deference.

In the following example incongruity arises from the juxtaposition of honorification with other, more explicit, signs appearing in the co-occurring text, in particular the later qualification of the original recipient of deference as being *baka* ‘an idiot’ (example from Okushi 1997: 178).

- (11) Context: Kazue and her close friend Mrs. Yama are tending the store. A female customer comes in carrying a shopping bag from Kazue’s competitor, I-ya (Store I). Kazue (K) talks later to Mrs. Yama (Y) about how she felt about this.  
       K: *Ano tesage-bukuro, I-ya no tesage-bukuro de kaimono*  
           that shopping.bag I-store GEN shopping.bag INS shopping  
           *ni irasi-ta n des-u mon.*  
           PURP come.HON-PST NMLZ COP.POL-NPST SFP [+def]  
           ‘That shopping bag, (that customer) came to shop (in our store) with a shopping bag from Store I.’

- Y: *Ima no?*  
 now GEN  
 ‘(The customer) just now?’
- K: *Soo. Baka zya-na-i no?!*  
 yes idiot COP-NEG-NPST NMLZ  
 ‘Yes. Isn’t (she) an idiot?!’

The “special effects” of honorific usage (*tokusyuna taiguu ito* ‘intent to treat (a person) in a special way’) described by Kikuchi (1997: 67), such as irony, criticism, sarcasm, etc., all have to do with a similar incongruence in the deictic patterns involved. Sometimes the effects of such incongruous usages cannot be immediately interpreted and remain ambiguous, as for example when a wife, talking to a person outside of the family, refers to her own husband with an honorific form. Given the dominant social norm whereby honorifics should not be used to refer to members of one’s ingroup when addressing someone in an outgroup, this use can be taken as either deliberate irony or an inadvertent “mistake” (Kikuchi 1997: 67), depending on how the speaker’s intention, or his/her knowledge of normative models of honorific usage, are assessed.

Judgments of inappropriateness can thus arise because of different degrees of competence on the part of different users, but they may also provide evidence for contrasting normative standards. If enough users come to recognize and sustain a “deviant” use, this can initiate a diachronic development. A frequently noted case in which a pattern of deference has been progressively and radically altered, is that of the *o-V-suru/itasu* construction, said to be shifting from a humble to a polite meaning – i. e., from non-subject honorification to addressee honorification (Matsumoto 2008).<sup>15</sup>

Examples of the *o-V-suru/itasu* construction like the utterance in (12), taken from an advertisement, pose no particular challenge to interpretation, although neither the agent nor the recipient of the action are explicitly marked. This is possible based on one’s knowledge of the normative interactional and deferential patterning involved in use of the *o-V-suru/itasu* construction, namely that the subject referent of a two-referent humble honorific is either the speaker or someone in the speaker’s domain. Additionally, the utterance conveys a default meaning that deference is being paid to the object referent (example from Matsumoto 2008: 98–99), glosses modified by the current author).

<sup>15</sup> This is linked, as discussed in Matsumoto (2008), to changes in the interpretation of ‘beneficial for the target of honorification’ associated with this construction. For the purpose of my discussion here this may be understood to arise from assumptions regarding deference entitlements, so I do not discuss it further.



- (12) *Nihon no kyuuka o otasuke-si-mas-u.*  
 Japan GEN vacation ACC help<sub>HUM</sub>-do-POL-NPST  
 ‘(The Association of National Park Resort Villages) will assist [+HUM] your vacation in Japan.’

Because the hearer can frequently be construed as the second referent in the referenced event *and* as a participant in the speech event (Dasher 1995: 215, 219), the possibility for an inferential extension emerges, which can make deference to the hearer increasingly salient. When such a recursive interpretation is sufficiently strengthened, it may trigger a further change, i.e. that such a form indexes deference *only* to the hearer. This involves a progressive relaxation of constraints on the range of referents that can appear in the subject position, so that utterances like (13), in principle forbidden because they subvert the normative participant and deferential schema, also become possible (example from Matsumoto 2008: 98–99, glosses modified by current author).

- (13) *Kotira de omati-si-te-kudasa-i.*  
 here LOC wait<sub>HUM</sub>-do-GER-give.me.POL-IMP  
 ‘Please wait [+?HUM/+POL] here.’

Such unstable constructions are however often the object of enhanced social attention. Examples like (13), considered outright mistakes in many manuals on the use of *keigo*, are considered to be at least “controversial” (Matsumoto 2008: 99; Dasher 1995: 200), even though a 1996 survey of Japanese language showed that usage such as this was supported by 40 % of the speakers surveyed.<sup>16</sup>

Together with the emergent effects conveyed by incongruous uses described above, referent honorifics, in the same way as personal pronouns, may also naturally carry other connotations, that is, other forms of non-referential indexicality, or indices of personhood. “Speaker elegance” (Tsuji-mura 1967; Kikuchi 1997: 354; S. Ide 2005) is one example of a widely recognized meaning of which many speakers have a marked metapragmatic awareness. Recent studies also show how referent honorification is subtly and strategically used by speakers in the construction of identity, of which we have seen a first example in (10). Cook’s study of a guest in a TV shopping program finds a systematic relation between the guest’s use or non-use of referent

<sup>16</sup> Komatsu (1967: 100), however, maintains that *o-V-suru/itasu* constructions have been ambiguous from the start, variably interpreted as deferential, humble, or ‘beautification’ honorifics. The strength of dominant normative models should not be underestimated given the considerable valorization of “proper language” in many sectors of public life (Pizziconi 2011: 61, 67). Whether this will result in a full-fledged shift remains to be seen, but the direction of this change is consistent with the general trend in semantic change in modals toward speaker-orientation (or the speaker’s judgment at the time of utterance), as opposed to event-orientation (Narrog 2005).

honorifics and the two capacities in which he participates in the program, that of a salesperson and that of a scientist. He adopts one or the other role by switching his use of referent honorification on and off; using honorification allows him to project a more involved attitude and thus speak as a salesperson, and not using it allows him to project a more detached attitude and thus speak as a scientist (Cook 2013, gloss modified by the current author).

- (14) Context: guest speaking as a sales person

*Ma soo iu imi de wa ma kitin-to deki-ru poridensan*  
 well so say sense INS TOP well properly be.able-NPST polident.acid  
*o koozyoo de- koozyoo de kenkyuu-si-te kitin-to*  
 ACC factory LOC factory LOC research-do-GER properly  
*tukur-asete-itadai-te, sono orizinaru no genryoo o*  
 make-CAUS-receive<sub>HUM</sub>-GER FL original GEN material ACC  
*tukat-te konkai tukur-asete-itadai-tei-ru*  
 use-GER this.time make-CAUS-receive<sub>HUM</sub>-PROG-NPST  
*no ga kotira no syoohin ni nar-imas-u.*  
 NMLZ NOM this GEN product DAT become-POL-NPST  
 ‘Well, this is the product that we have made (+HUM) (lit: we have received your letting us make), uh, using original material, having researched and made (+HUM) (lit: receive your letting us make) properly in the factory ... in the factory a polident acid that can in that sense properly (coat the teeth).’

- (15) Context: guest speaking as a scientist

*Hiaruronsan to koraagen de kuti n naka no*  
 hyaluronic.acid and collagen INS mouth GEN inside GEN  
*situzyun kankyoo o kititto maa kiipu-site-kure-te, sorede*  
 moist environment ACC properly FL keep-do-give.me-GER so  
*kuti n naka o ii zyootai ni tamotte-kure-ru.*  
 mouth GEN inside ACC good condition DAT keep-give.me-NPST  
*Soo suru-to sinikuen sisyuuen mo sizen-ni osae-rare-te*  
 so do-COND gingivitis pyorrhea also naturally suppress-PASS-GER  
*kuti n naka ga kenkoo-na zyootai ni tamot-e-ru.*  
 mouth GEN inside NOM healthy condition DAT keep-POT-NPST  
 ‘Hyaluronic acid and collagen properly maintain the moist environment in the mouth and so keep the inside of the mouth in a good condition. Then gingivitis and pyorrhea are naturally suppressed and the inside of the mouth can be kept healthy.’

Cook's analysis of the host's verbal behavior is rightly prefaced by a discussion of the "practice of Japanese sales talk," which, as she notes, provides the frame of interpretation for this individual's verbal behavior. Indeed it is our familiarity with the discursive practices of a specific context or register of use and the specific indexical meanings associated with forms occurring in that register, that enables us to appreciate fine nuances of meaning that arise, especially when users depart from the expected stereotypical patterning of that register (cf. Agha 2007: 236 on enregistered identity), forcing novel inferences.

It is clear that all these "meanings," including deference, criticism, identity, etc., are not coded in the honorific forms themselves but emerge from situated contexts of use, are an outcome of the overall (congruous or incongruous) effects of different textual or contextual factors, and moreover hinge on our knowledge of specific registers of use based on our own reflexive models of behavior.

In my discussion so far of different types of indexicality, such as the participation schema considered in Section 4.1.1 and the schema of deference orientation and indices of personhood considered in this section, I have noted that deictic expressions differ in terms of their referential affordance. The characteristics of deictic expressions in these various respects are summarized in Table 5.

**Table 5:** Different schemas and types of indexicality exhibited by different types of social deictics

| Class                               | Referential information | Participation structure | Deference orientation | Other indexicality |
|-------------------------------------|-------------------------|-------------------------|-----------------------|--------------------|
| REFERENT HONORIFIC (SUPPLETIVE)     | +                       | +                       | +                     | +                  |
| REFERENT HONORIFIC (CONSTRUCTIONAL) | +                       | +                       | +                     | +                  |
| ADDRESSEE HONORIFIC                 | –                       | –                       | +                     | +                  |
| PRONOUNS                            | +                       | +                       | +                     | +                  |

Some forms (like the referent honorific *mesiiagaru* 'eat' and honorific syntactic constructions such as *o-(V)-suru/-ni naru*, but also other honorific nouns) carry referential information, whereas others (like the addressee honorific suffix *-masu* and the honorific/beautification prefix *o-*) do not and are instead entirely modal, indexing meanings relevant to the speech event only (Dasher 1995: 24–27, 39–40). Deictic forms also differ in terms of whether they index an *interactional* or *participation* structure (e. g., the so-called "subject" vs. "object" honorifics *mesiiagaru* [eat +HON] vs. *itadaku* [eat +HUM], which link the grammatical subject to different participants in the speech event), or not (e. g., addressee honorifics). While these all have the potential to index a *deference* schema, some do so directly in their marking of referents or predicates

(e. g., second/third person pronouns and referent honorifics), while others do so indirectly as markers of speaker stance at the time of utterance (e. g., addressee honorifics<sup>17</sup> and first person pronouns<sup>18</sup>). Finally, these are all potentially vehicles of other indexical connotations, in particular about the types of speakers typically adopting them in their speech, which are not deictic. This feature is not unique to the forms in this table (recall Minami's long list of expressive devices in 2.2), but depends in each case on a process of enregisterment specific to that form.

To sum up the points made so far, we have noted that social deictics can convey a range of meanings beyond their typical characterization as markers of rank and status. Schemas of interpretation which (minimally) provide information about the structure of participant roles and deference orientation provide anchoring mechanisms that enable contextual specification; text-level effects (e. g., congruence or incongruence of other elements of the utterance) can alter those meanings; processes of enregisterment allow further indexical characterizations, such as masculinity/femininity or other speaker traits. Some of the effects obtained by these forms in situated contexts of use are more “iconic” than others: when users are asked about their general meaning, in no particular context, they are likely to mention “formality” or “gender” rather than “sarcasm” or “criticism.” What makes one meaning more iconic than another is a sociolinguistic fact – and in this sense these forms are indeed *social* deictics – but this does not make iconic meanings any more intrinsically coded in forms such as *watakusi*, *boku*, or *nasaru* than they are in the formal attire one may choose to wear. We turn to these kinds of conventional, or normative, iconic associations in the next section.

## 4.2 The social in social deixis

When viewed diachronically, the development of social deictics appears to derive from multiple semantic-pragmatic processes such as semantic generalization or grammaticalization, but common to all developments is the inferential exploitation (and reanalysis) of some component of the original semantic meaning or of some underlying schema of interpretation. Referent honorific forms, for example, derive from non-honorific forms via the referential component. Honorific constructions build on the abstract semantic features of non-honorific constructions (e. g., the

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<sup>17</sup> Addressee honorific forms are considered here to index a deferential schema by virtue of their typical interpretation as indices of speaker stance: whereas *-desu/masu* index a prototypical “distance from speaker,” zero morphemes index “proximity to speaker.”

<sup>18</sup> As noted in Table 3, for example, the first person pronoun *watakusi* indexes a formal stance and *ore* an informal one; contextually these stances have implications for the hearers although the forms themselves do not (cannot) “convey” deference to hearers.

exploitation of the semantic trait of “impersonalization” in passive constructions to produce a polite effect). Similarly, the exploitation of a deictic component permits a shift from humble referent honorifics to addressee honorifics (see Dasher 1995: 221 and the earlier examples (12) and (13)).

Regardless of the nature of these developments, whether they result from the unintentional “extravagance” of an individual user’s innovation that then comes to be ratified by other members of society, from semantic loss and reanalysis, or from changes in the extra-linguistic context, these processes are invariably “social,” that is, they take place over repeated encounters in and across social groups, gain momentum through communicative acts and discursive practices, and invariably involve some degree of reflexive activity (for a detailed discussion see Agha 2007).<sup>19</sup> Such a rich and sophisticated inventory of processes no doubt suggests considerable socio-cultural concern with the structuring of human relations, but to describe such concern without invoking essentialist discourses about ethnic identity, if not national ethos, is notoriously difficult. While it is undeniable that a concern with matters of politeness is a salient phenomenon in many social contexts of life in Japan, to talk about the innate politeness of all Japanese people, or to say that politeness norms are followed unquestioningly by all Japanese users is clearly not credible. Rather, it is crucial to recognize from the start the empirical fact that no matter how typical or widely recognized, some of the meanings conveyed by these forms are given different values by different social groups. That the same sign, e. g., a referent honorific verb, can be evaluated as “elegant” by one speaker and “stiff” by another, “appropriately formal” by one or “cold” by another, suggests an underlying tension that may originate in micro- or macro-mismatches in affective stances, personality, political objectives, or ideological views, or in struggles between different social categories of users (Eelen 2001: 44–47) holding competing models of use. Selecting any single meaning, e. g., “formal,” as an exhaustively defining meaning for a category of forms, may be vitiated by an essentialist bias and may at best betray the evaluator’s (or researcher’s) very own individual stance. Caution should also be used regarding the characterization of specific categories of users, as Okamoto (1997) noted with regard to the essentialization of “gender” in sociolinguistic studies (cf. Section 3.2).

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<sup>19</sup> These are “activities in which communicative signs are used to typify other perceivable signs” (Agha 2007: 16). See chapter 1 of Agha (2007) for a detailed discussion.

## 5 Conclusion: Re-defining “social deixis” from an indexical perspective

The discussion above has highlighted the limitations of various approaches to the study of social deixis, and in particular the following: the assumption that that an *a priori* identifiable essential meaning is inbuilt or encoded in linguistic forms, overlooking the constitutive role of co-textual or contextual factors in the specification of such meanings; a programmatic neglect of the very social environment which is necessary to feed meaning to these forms and which these same forms enable users to shape, sustain, dispute, or subvert by using such forms in normative or non-normative fashions; and the associated neglect of cultural and ideological considerations that generate documented argumentative dissonances in the interpretation of social meaning. An indexical view combines instead an analysis of the linguistic properties of the class of forms called social deictics, that is, the schema they provide, with a focus on the social context, understood as specific socio-historical conditions, different value systems coexisting within society, and differential degrees of social and linguistic competence across social groups, and on how all of these dynamically confer content to deictic forms.

Deixis offers schemas of interpretation, most notably a schema of participants in the speech event and in other events or referents locatable in relation to it, and a schema of speaker stance. Speaker stance is prototypically represented as a patterning of the social space surrounding the speaker, locating referents and participants in the speech event as more or less socio-affectively close to the speaker, something that is (stereo)typically interpreted in terms of patterns of deferential attitude. These schemas, and not just semantic deficiency, are the crucial properties of social deictics. Japanese social deictics have also often been discussed as signs imbued with additional connotations regarding the user, including features of vulgarity or elegance, level of education, etc., but our critique has characterized these features instead as a non-unique indexical property, and one shared with any sign, linguistic or otherwise, that can be recognized, through acquaintance with relevant registers, as an attribute of specific types of users, and their stances or relationships to other users or settings.

An indexical analysis of linguistic properties rejects a coding view of meaning, and sees meanings as emerging instead from the interaction of various deictic schema with various aspects of context (including both co-text and situational setting), and as affected by social processes of interpretation, namely processes mediated by metapragmatic reflexive activity. This approach accepts that a specific deictic marker can commonly or routinely be associated with some specific social meaning, i. e. can be taken by users to be emblematic of social or affective stances, but unlike other approaches, it takes these understandings as the result of the socialized nature of linguistic phenomena and no more than normalized stereotypical interpretations. It therefore treats common taxonomies such as “polite,” “humble honorifics,” etc.

with caution, and problematizes their deceptive naturalness in lay (and sometime in scholarly) discourse by exposing their fundamentally ideological nature. At the same time, an indexical view notes that stereotypical meanings are routinely used as a starting point, or exploited as tropes, to generate emergent effects, derived by the degree of congruence between a deictic's stereotypical reading and other co-textual and contextual elements. For this reason, conventional (lay and scientific) tags such as "polite," "formal," etc. turn out to be insufficient, if not misleading, in describing the semiotic potential effectively available to these forms in common situations of use, a potential that is invariably larger than its typifications in the minds of users.

Social deictics, just like other semiotic systems – both linguistic and non-linguistic – are acquired through socialization processes that link them to some socially relevant indexical values (polite, humble, formal in attitude, masculine in character, etc.), are likely to be conceptualized as elements of specific socio-cognitive schema (e.g., what kinds of speakers are likely to use a particular form, in what settings, in what participation structures, etc.), and as such come to be recognized by users as (parts of) repertoires of semiotic registers, which are always a product of a specific time and space. Because they are dependent on users' ideologies as well as extrapersonal factors such as the verbal practices of particular social groups, neither the range of or understanding of the signs that constitute such registers are ever entirely shared by all users. Society-internal or group-internal variations are commonly observed at any point in time, and heterogeneous interpretations of deictics are themselves an important feature of their thoroughly social character, in turn conferring on them semiotic potential of various kinds. The synchronic heterogeneity exhibited by deictics, as well as their observed diachronic changes, suggest that their meaning is in a constant state of flux, developing under the pressure of both system-internal and extra-linguistic factors. As an example of the former, we have seen, as in example (13), that even when abstract underlying features, such as the deictic feature "socially or affectively distant from the speaker," remain constant, other features of the schema can be altered, so that the meaning of "deference to referent" can, diachronically, gradually extend to "deference to addressee." Similarly, the phenomenon of "excessive *keigo*" or "double *keigo*" (e.g., *irassiyarareru* vs. normative *irassiyaru* 'be/go' [+DEF], *o-tatiyorini naraneru* vs. normative *o-tatiyorini naru* 'stop by' [+DEF], etc.) that is often deplored in recent social commentaries has to do with a progressive dilution of perceived honorific value on the part of certain groups of users. An example of extra-linguistic factors are the changes brought about by the social emancipation of women to the prescriptive norm that women conform to a polite(r) verbal demeanor. What once used to be considered unmarked behavior (a polite demeanor) has come to be viewed as an emblem of gender subordination and discrimination, and socially disputed. Alterations in the indexical values of these linguistic forms create multiple indexical orders that may coexist at any given point in time and give rise to competing models of social indexicality, typically evidenced by lamentations that "the language is in a state of chaos," "young people don't know how to speak properly," and the like.

An account of social deictic forms that highlights their indexical properties as a starting point for the development of emergent meanings appears advantageous when dealing with the observed variability in both actual instances of their use and in metapragmatic evaluations that are associated with them. Conversely, the linguistic analysis of deictic properties cannot be decontextualized, and must be supported by a focus on the social construction of meaning, that is, the social processes that feed “value” to linguistic forms. Ethnographic accounts are able to detect variability in use and in metapragmatic judgments that flag the ways in which social deictics may be socially disputed. An indexical approach is therefore best equipped to avoid the pitfalls of often innocent, unintentional stereotypifications.

The rich linguistic repertoire of Japanese politeness is not the only reason why *keigo* has been singled out in lay as well as scientific discourse as an emblematic feature of the language (if not of Japanese culture or even of Japanese people as a whole). There is a far more important reason for the significance of *keigo* in and for Japanese society, and that is in the symbolic capital that command of polite registers imparts to its users. The commodification of *keigo* has consequently become a prodigious, pervasive force that supports its survival in spite of the considerable difficulties posed by its mastery. The school curriculum may teach it in theory, but the reality of its use in the workplace and society at large is far more complex and challenging for all concerned. This complexity is a result of *keigo*’s indexical nature, and the intimate relationship of interdependence between language and social context.

Those who forecast the disappearance of *keigo* in democratic and egalitarian Japan underestimated its social value and its endlessly renewable expressive potential. Social deixis is as important today as it was in feudal times. Its parameters may have changed but not the semiotic activity they represent, something that has shaped and will always continue to shape interaction between human beings.

## Additional abbreviations

FL – filler, NPST – nonpast, POT – potential



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## 17 Conversational implicature

### 1 The beginning: Grice (1975)

Imagine that you are having the following conversation with a friend.

- (1) A: *I'm hungry.*  
B: *There's a leftover pizza in the fridge.*

If you are A, you naturally think that you are allowed to eat the pizza in the fridge. However, that meaning is not explicitly expressed, and it is indeed not impossible that the pizza belongs to B's roommate, who would be very upset if anyone ate it. Why, then, do you feel justified to assume that it is OK to eat the pizza? Your sense of entitlement in (1) exemplifies the kind of meaning that Grice's (1975) theory of conversational implicatures aims to capture. The first half of this chapter provides a brief overview of this concept and a short discussion of some later developments and revisions. The second half examines several phenomena specific to Japanese in the context of possible typological variations relevant to the generation of conversational implicature.<sup>1</sup>

The notion of conversational implicature is one of the most important ideas to have been put forth in the field of pragmatics. The idea was publicly introduced in Grice's William James Lectures at Harvard in 1967, and the contents of these lectures became highly influential both in philosophy and linguistics even before the publication of his paper 'Logic and conversation' in 1975. In the pre-Grice era, the theory of meaning, both in analytic philosophy and in linguistics, focused almost exclusively on the meaning of linguistic expressions, or more plainly, the meaning of what is said. Meaning beyond that level, what is implicitly suggested or insinuated or read between the lines, was regarded as a peripheral issue at best. Grice's idea of implicature made it possible to provide systematic, rule-governed explanations for how meaning can be generated beyond what is said.

The nature of conversational implicature is better understood when it is compared to another type of implicature; conventional implicature. One of the most frequently mentioned cases of conventional implicature is the English conjunctive *but*.

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<sup>1</sup> The main objective of the first half of the chapter is to provide enough information to understand the relevance of the Japanese data in the second half, rather than to give a thorough and comprehensive review of the topic of conversational implicature. There are several general review articles on implicature to which the reader is directed for a fuller treatment of the topic: Horn (2004), Davis (2010), Potts (2015).

- (2) a. *Andre is a linguist and fun to play Scrabble with.*  
 b. *Andre is a linguist but fun to play Scrabble with.*

These sentences have the same truth conditions, regardless of the choice of connective. However, the *but* version communicates something that the default connective *and* does not, namely the speaker's belief that linguists make annoying partners in playing Scrabble. Although it might appear that this additional meaning is a lexical entailment of *but*, that is not the case. Unlike entailment, this meaning cannot be denied or rejected in any simple way. If someone objected to (2b) by saying 'No, that's not true', she would have to believe either that Andre is not a linguist or that he is not a good person to play Scrabble with, or both. Crucially, the meaning of 'unexpectedness' cannot be negated in that way. Thus, the additional meaning of *but* should be treated differently from its entailed meaning. The term 'conventional implicature' was invented for this kind of conventional meaning that is nonetheless outside what is said.

In contrast, conversational implicatures are, first and foremost, not conventional. As we will see later, linguistic conventions may interact with conversational implicatures, but we must keep in mind that the foundation of conversational implicatures lies outside of linguistic conventions. For Grice, a conversation is a collaborative enterprise in which the participants aim at attaining a common goal. This is the basic assumption behind his *Cooperative Principle*:

- (3) Cooperative Principle: Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged. (Grice 1975/1989: 26).

This principle is augmented by a set of specific directives, called *maxims*, which prescribe what reasonable conversations should be like.

- (4) a. Quality: Try to make your contribution one that is true. Do not say what you believe to be false. Do not say that for which you lack adequate evidence.  
 b. Quantity: Make your contributions as informative as is required. Do not make your contribution more informative than is required.  
 c. Relation: Be relevant.  
 d. Manner: Be perspicuous. Avoid obscurity of expression. Avoid ambiguity. Be brief. And be orderly.

It is fairly clear, as Grice himself admitted, that (4) is a varied assortment. Not all the maxims are of equal significance, and some make more essential contributions to a fruitful conversation than others. The maxim of quality is arguably more fundamental

than the others, as an intentional violation of it makes a speaker unreliable and not trustworthy, and as such is a much more serious offense than being over-informative, obscure, misleading, or confusing. Thus, it seems reasonable to presume that the maxim of quality is special in the sense that the other maxims become relevant only on the assumption that the speaker obeys the maxim of quality. It has also been pointed out (e.g., Horn 1984) that the second maxim of quantity can be subsumed under the maxim of relevance, as providing more information than required typically means providing irrelevant information. Such discrepancies and redundancies among the maxims have led to many attempts to reduce or realign the original maxims (see Section 2.2).

Conversational implicatures are evoked based on the interlocutors' presumption that everyone involved obeys the maxims. In (1), for instance, B's mentioning of a pizza that A cannot consume would be irrelevant when A has just indicated his need for food by saying he was hungry. Thus, B must have meant that A was welcome to have the pizza. Otherwise, he would have violated the maxim of relevance. In some cases, implicatures are generated due to an apparent violation of a maxim. Sentences that are obviously false or tautological belong to this category of implicature-inducing cases. By uttering an evidently false sentence, the speaker would be making a blatant violation of the maxim of quality if the literal meaning is what the speaker intends to communicate. A tautological sentence violates the first half of the maxim of quantity ('make your contributions as informative as required') because, being true under all circumstances, it fails to add any new information. However, such sentences can be used felicitously to convey very particular implicatures.

- (5) a. A: *The Cubs will win the World Series this year.*  
       B: *And the Pope will approve gay marriage.*
- b. *If you are late, you are late.*

In (5a), B pretends to continue A's statement with *and* and adds a sentence that is obviously false. Since one of the conjuncts is obviously false, the whole conjunction is false as well. This conveys that B finds it impossible that the Cubs will win, a meaning that comes about in the following way. If A's statement were true, B's addition of an outrageous sentence would make the whole conjunction newly false. That would be a serious offense, something that a good-behaving conversational participant would not commit. However, if A's statement is false in the first place, then such an addition does not change the truth value of the whole conjunct. Thus, B communicates, by adding an obviously false sentence, his disbelief of what A said. The tautological sentence (5b) is also meaningful. It elicits a sense of helplessness or futility in trying to change the situation. A violation of the maxims of manner, in turn, has a variety of possible effects. In a doubly negated sentence like 'Not that I didn't like the movie', for instance, the truth conditions may be identical to the simple affirmative counterpart



'I liked the movie.' The double negative version, which is therefore a violation of the maxims of manner from a purely semantic point of view, communicates something more than what the affirmative sentence does, such as that there are a few negative things about the movie that prevent me from giving a straightforward compliment.

Grice also discusses some important features of conversational implicatures that can be used as diagnostics for identifying conversational implicatures.

- (6) a. Calculability: The addressee must be able to follow the series of inferences that derive the implicature.
- b. Detachability: Conversational implicatures are not tied to particular linguistic expressions. If a sentence  $\varphi$  generates an implicature  $\psi$ , then,  $\varphi'$ , a sentence that is distinct from  $\varphi$  but expresses the same meaning as  $\varphi$ , gives rise to the same implicature  $\psi$ .
- c. Indeterminacy: In a given situation, there may be more than one way to explain why the speaker made an utterance in the way that she did. Thus, there may be a disjunction of multiple possible implicatures associated with such an utterance.
- d. Cancellability: Conversational implicatures can be negated without causing a logical contradiction.

The first feature is probably self-evident. If a meaning is present but cannot be calculated via inferences from the maxims, that meaning is not a conversational implicature. The second feature is about the non-conventionality of conversational implicatures, and based on it, we can predict that synonymous forms will elicit the same implicature. The following examples illustrate this feature.

- (7) a. *More than half of the students passed.*
- b. *The majority of the students passed.*

These sentences are (near-) equivalent in terms of the meaning they assert, and as expected, they both implicate that not all students passed.<sup>2</sup>

The indeterminacy of implicatures can be easily seen in an example such as the following. If someone says 'Marie has many cookbooks' as an answer to the question, 'Is Marie a good cook?', the utterance can be taken either positively or negatively. Different assumptions (e.g., how well the speaker knows Marie, how close they are, etc.,) lead to different conclusions. The indeterminacy is presumably responsible for

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<sup>2</sup> For this test to work, however, one needs to choose a paraphrase that has the same level of complexity and length. Otherwise, the Manner maxim kicks in, and a different implicature might be evoked.

the re-enforceability of conversational implicatures (cf. Levinson 2000). For instance, ‘most students passed’ can be followed by ‘but not all of them did’ without evoking a strong sense of redundancy. This last feature is probably the most extensively discussed, since it is believed to be a useful device for separating conversational implicatures from entailments, presuppositions, and conventional implicatures (regarding presupposition, see also Kinuhata, this volume). In the example given earlier in (1), for instance, the implicature that B is allowed to eat the pizza can be canceled, whereas the pizza’s location, a part of the asserted meaning, cannot.

- (8) A: *I’m hungry.*  
 B: *There’s a leftover pizza in the fridge, but ...*  
 a. *It’s my roommate’s, so I can’t let you have it.*  
 b. *# It’s not in the fridge.*

Like entailments, presuppositions and conventional implicatures are also believed to resist cancellation. In that respect, this last property is a very useful tool to distinguish conversational implicatures from other such types of meaning.

The theory presented in Grice (1975) was admittedly a preliminary sketch, but it has been and continues to be highly influential. Section 2 will consider some revisions and developments to his theory that followed later, but his original insights run through all of them.<sup>3</sup>

## 2 Revisions, developments, and controversies

### 2.1 Quantity implicatures

#### 2.1.1 Weak vs. strong implicature

Among all types of conversational implicature, the most extensively researched are quantity/scalar implicatures, henceforth Q-implicatures, following the terminology

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<sup>3</sup> Grice also discusses the distinction between ‘particularized’ and ‘generalized’ implicatures. The former arise due to particular features present in the utterance context, so that the identical sentence fails to generate the same implicatures when used in a context that lacks those features. Generalized conversational implicatures are calculable based solely on a basic knowledge of conversational structure and widely held assumptions about the subject matter at issue. This distinction became an essential component of such frameworks as Levinson (2000), while others, most notably the Relevant Theorists (e. g., Sperber and Wilson 1995, 2004), are more skeptical of the distinction being categorical or theoretically relevant.

of Horn (1984, 2004), as these are intimately connected to such core semantic issues as logical connectives and quantification.<sup>4</sup> As the following examples illustrate, some quantifiers, such as *most* and the disjunctive *or*, appear to elicit meanings that are stronger than their supposed semantic denotations.

- (9) a. *Most students passed.*                       $\rightsquigarrow$  *Not all students passed.*  
       b. *Marc visited Nice or Marseille.*     $\rightsquigarrow$  *Marc did not visit both cities.*

If *most* means ‘more than 50 %’, 100 % certainly counts as more than 50 %. Why, then, is *most* often taken to mean *not all*? Similarly, the logical meaning of the disjunctive *or* does not exclude the conjunctive meaning *and*, but the use of *or* above clearly suggests that Marc did not go to both Nice and Marseille. Q-implicature provides a convenient way to derive such strengthening effects without giving up the weaker semantics of these expressions. Let us review briefly what Geurts (2010) calls ‘the standard recipe’ for generating Q-implicatures.

- (10) a. The speaker *S* says  $\phi$ .  
       b. *S* could have made a stronger and/or more informative claim by saying  $\psi$ . There must therefore be a reason for *S*’s not saying  $\psi$ .  
       c. It may well be that *S* fails to believe that  $\psi$  is true.  
       d. Under the assumption that *S* is knowledgeable and has a definite opinion about the truth/falsity of  $\psi$ , one can further assume that either *S* believes that  $\psi$  is true or *S* believes that  $\psi$  is false.  
       e. Combining the last two steps, one arrives at the conclusion that *S* believes that  $\psi$  is false.

It is important to note that the fourth step, (10d), is an additional assumption that is not guaranteed to hold all the time. (10d) has been variously called the ‘Expertness Assumption’ (Sauerland 2004), ‘Authority Assumption’ (Zimmermann 2000), or ‘Com-

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<sup>4</sup> The term *scalar implicature* is typically used to refer to a Q-implicature, based on certain scales, called *Horn Scales* (from Horn 1972, Horn 1989), that are highly predictable. Examples of such scales include {or, and}, {may, must}, {some, many/most, every}, {warm, hot}, etc. However, there are also Q-implicatures that are elicited without such pre-established scales (cf. Hirschberg 1985). For instance, if someone were to ask ‘Has Anna sent the present to Maria?’, one could answer, ‘She bought wrapping paper,’ which would implicate that the speaker believes that Anna has not sent it yet. The term *quantity implicatures* typically includes those non-scalar implicatures that also make reference to quantity of conveyed information.

petence Assumption' (van Rooij and Schulz 2004),<sup>5</sup> and without it, the implicature would be much weaker, namely that the speaker *S* is not certain whether the stronger alternative  $\psi$  is true or false. Strong Q-implicatures have attracted more attention in the field, with their weaker counterparts often being dismissed as peripheral phenomena (e.g., Levinson 2000, Chierchia 2004b). Some recent works, however, do take the weak-strong distinction to be theoretically relevant (e.g., Sauerland 2004, Geurts 2010, van Rooij and Schulz 2004).

### 2.1.2 Localist theory

One of the most intriguing developments in the research on Q-implicature is the emergence of the 'localist' approach. The issue addressed by advocates of this approach raises one of the most fundamental questions regarding implicatures: how and at what level implicatures are computed. The standard view portrays implicature generation as a post-compositional-semantic process. In other words, it assumes it to be necessary to have a complete semantic (i.e., truth-conditional) meaning of a sentence before pragmatic inferences based on the Gricean maxims can be made.<sup>6</sup> This 'globalist' view is considered the standard Gricean position, but it has been challenged by Chierchia (2004a), Chierchia (2006) and Chierchia *et al.* (2008). Advocates of 'localism' point to implicature patterns under embedding as evidence of the need for local implicature computation.

- (11) a. *If Paul or Bill comes, Mary will be upset, # but if Paul and Bill both come, Mary won't be.*  
 (= Chierchia 2006, (37ab))
- b. *If you take salad or dessert, you pay \$20; but if you take both, there is a surcharge.*  
 (= Chierchia et al. 2008 (21b))

With the first sentence of (11a), one naturally infers that if both Paul and Bill come, Mary will be upset (perhaps even more upset). Thus, the continuation in (11a) is felt infelicitous. The disappearance of the 'not both' implicature in (11a) does not argue decisively either for or against the localist approach. An *if*-clause is a downward entailing context, and the generation of the 'not both' Q-implicature leads to a semantically weaker assertion as a whole.<sup>7</sup> The persistence of this implicature in (11b), on

<sup>5</sup> Competence Assumption is the term I will use in this chapter.

<sup>6</sup> A potential exception to this generalization is manner. For instance, the NP *the guy my mother is married to* can generate extra meaning in contrast to the more standard expression *my step-father*, and this meaning can be evoked before the sentence containing it is fully interpreted.

<sup>7</sup> This means that the semantic strength relation reverses in a *if*-clause: For any  $p, q, r$ , if  $p$  entails  $q$ , then  $q \rightarrow r$  entails  $p \rightarrow r$ .

the other hand, challenges the traditional view. Data of this kind among others are taken by Chierchia *et al.* (2008) to mean that Q-implicatures can in principle be calculated within embedded clauses.<sup>8</sup> In their analysis, a strengthened Q-implicature is generated by the syntactic presence of an exhaustivity operator (cf. Fox 2007), whose meaning is akin to that of ‘only’, which can be inserted at a clausal level (root or embedded). The localist analysis has met some objections, and there have been alternative explanations offered within the globalist tradition (e.g., Russell 2006, Geurts 2009).

## 2.2 Re-working the maxims

As mentioned earlier, the unequal status of the four Gricean maxims was evident from the very beginning, so it is not surprising that many attempts have been made to amend them. Some believe that Grice’s original maxims embody redundancy and attempt to reduce the number of maxims. Relevance Theory (Sperber and Wilson 1995, 2004) is representative of such an approach. This theory makes use of one and only one maxim, that of relevance. The notion of relevance in this theory is, not surprisingly, much more enriched and generalized than in its original Gricean version, which leaves it rather vaguely defined. Relevance Theory provides a guideline for (i) ‘maximizing relevance’ in linguistic communication, and (ii) following a route to the desired level of relevance with ‘least effort’. This theory also purports to negotiate oppositions that come from conflicting needs of the speaker and hearer that are central to the Neo-Gricean theory of Horn (1984) (see below).

Proposals have also been made to augment Grice’s original maxims with additional maxims or principles. An important pragmatic concept that lies outside of the Gricean maxims is that of politeness, and politeness strategies often come into conflict with other Gricean maxims.<sup>9</sup> In the influential theory of politeness of Brown and Levinson (1978), for instance, being conventionally indirect is listed as one of the politeness strategies. It is obvious, however, that being indirect is at odds with most of the maxims of manner, as being indirect often leads to a lengthier expression and makes the utterance harder to understand. In some cases, politeness considerations even compromise the maxim of quantity. The speaker may decide to withhold relevant information when she expects that the addressee or others will be upset with the revelation of such information. Another important addition is the *Principle of Infor-*

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<sup>8</sup> Chierchia *et al.* (2008) also present a localist account for the generalization presented by Hurford (1974) that a disjunction is infelicitous if one of the disjuncts entails the other (e.g., # Maria bought a car or she bought a vehicle).

<sup>9</sup> Although not included in the maxims, the significance of politeness in conversation was acknowledged by Grice himself (Grice 1975: 47).

*mativeness* of Atlas and Levinson (1981). The notion of informativeness is undoubtedly relevant to Grice's quantity maxim, as it is supposed to regulate the amount of information conveyed by a sentence. Atlas and Levinson (1981) note, however, that there are cases of semantic strengthening that are unexpected under the standard reasoning based on the quantity maxim (i.e., as laid out in the standard recipe in (10)). The following are some examples.

- (12) a. *If it is a nice day tomorrow, we will go to the beach.*  
       ↗ If it is not a nice day, we will not go to the beach.
- b. *Bart got divorced and started going out with his boss.*  
       ↗ Bart started going out with his boss after he got divorced.

The logical meaning of the conjunction *and* is unmarked for temporal ordering, but (12b) strongly conveys that the two events took place in the order presented by the speaker here. This strengthening should not occur if considered in light of the more specific expression ... *and then* ... as a possible alternative. This alternative is stronger than what is said in (12b), and thus the expected Q-implicature (without the Competence Assumption) would be that the speaker is not certain about the temporal ordering of the two events. This is exactly the opposite of what we observe in (12b). Similarly, an *if*-clause is often strengthened to an 'if and only if' interpretation, but such an effect is not expected from the standard quantity based account that predicts an implicature to be generated from the fact that the speaker chooses not to say the lengthier 'if and only if.' The *Principle of Informativeness*, restated as in (13) by Levinson (1983), is designed to capture strengthening effects of this kind.

- (13)       Read as much into an utterance as is consistent with what you know about the world.

(Levinson 1983)

The ordering in a conjunction of the form *p and q* typically mirrors the temporal sequence of two events when the conjuncts are eventive statements, and there is no good reason to suppose that the speaker did not follow this typical practice. Therefore, the hearer of (12b) assigns the stronger meaning to it.

The Principle of Informativeness is integrated as part of a more general relevance-based principle in the realignment of maxims proposed in Horn (1984, 2004). In his revised categorization, Horn reduces all maxims and sub-maxims (except for the quality maxim) to one of the two basic principles, the Q-principle and the R-principle.

- (14) Horn (1984:13, (1ab), slightly modified)
- a. The Q-Principle (hearer-based)  
Make your contribution sufficient. Say as much as you can (given R).
  - b. The R-Principle (speaker-based)  
Make your contribution necessary. Say no more than you must (given Q).

The Q-Principle subsumes the first quantity maxim ('be as informative as possible') as well as the first two clarity-related manner maxims ('avoid obscurity of expressions and ambiguity'), and the R-principle covers the rest: the second quantity maxim ('do not be over-informative'), the relevance maxim, and the last two manner maxims ('be brief and orderly'). The Q-Principle is labeled as 'hearer-based' since it minimizes effort on the hearer's behalf: if sufficient information is provided in a manner that makes information retrieval an easy task, the hearer need not go to the extra effort of obtaining that information. On the other hand, it is the speaker's effort that is at stake with the R-principle: by avoiding saying unnecessary or obvious things, the speaker can economize his own effort.

## 2.3 Summary

Grice's theory of conversational implicature has fueled a massive volume of research, not only in pragmatics and semantics, but also in such fields as conversation analysis and sociolinguistics. Theoretical innovations continue to emerge, and new discoveries, or old discoveries that were previously unassociated with conversational implicature, continue to be reported. There are furthermore increasingly many experimental enterprises that aim to test empirically the theoretical claims of the Gricean approach. It is intellectually satisfying to see a field that has made so much progress since Grice's seminal work continue to move forward in this way with no signs of slowing down. One concept that is relatively new to the minds of formal theorists is the possibility of cross-linguistic variation in the generation of conversational implicature. This topic, which has so far not attracted substantial attention, is one I will address in the following section in light of specific phenomena from Japanese.

# 3 Phenomena in Japanese

## 3.1 Cross-linguistic variation in conversational implicature?

As can be expected, the concept of conversational implicature has also been influential in pragmatic research in Japanese. Many textbooks in pragmatics explicate

Gricean theory with relevant examples from Japanese, illustrating how fruitfully the concept can be applied to conversational phenomena in Japanese as well. On the other hand, not much attention has been focused on Japanese phenomena from a cross-linguistic point of view. This is most likely due to a common assumption that the principles behind the theory of conversational implicature – Grice's Cooperative Principle and reasoning based on his maxims – are universally applicable, and that there are not significant variations across languages in the way conversational implicatures are generated.

It is nevertheless meaningful to consider phenomena of conversational implicature specific to Japanese in a cross-linguistic context. While it is possible that Gricean principles and maxims may be universal, different priority patterns may be found across languages in the way they operate. Such differences will undoubtedly have an impact on linguistic forms and their possible interpretations. Furthermore, even if there are no significant variations in the principles and maxims themselves that generate conversational implicatures, we may still observe cross-linguistic variations, due not necessarily to meanings that are themselves conventionalized, but to differences in linguistic conventions, which are known to vary across languages, that *lead* to different patterns of conversational implicature. We can anticipate, however, that problematic situations will be encountered where it is not easy to determine the nature of the implicatures involved. The involvement of linguistic conventions could make a conversational implicature look like a conventional one. It may even be possible that a certain implicature may be conversational in one language but have a corresponding implicature in another language that has been conventionalized. In what follows, I will present some case studies of Japanese phenomena, not as conclusive instances of conversational implicature, but as subject matter that has the potential to deepen our understanding of the typology of conversational implicature.

### 3.2 Variations in the Cooperative Principle and maxims

In discussing possible typological variations in conversational implicature, we must start with the most basic question: are Grice's Cooperative Principle and maxims universal or do they leave room for cross-linguistic/cross-cultural variation? It is certainly true that we are not always cooperative. Linguistic activities take place in a variety of non-cooperative contexts – in a competitive or confrontational context, for example, one may be motivated to deceive or conceal necessary information from someone else. In such situations, the linguistic behavior of the participants in a conversation can be non-Gricean. However, situational variation of that kind is usually not permanent and does not necessarily demand a revision of the principles themselves. If there is a linguistic community in which not being cooperative is the norm, one could argue that Grice's principles and maxims are not universal. Keenan (1976), for example, endorsed a relativist view, reporting that Malagasy is one such language



whose speakers routinely violate one of Grice's maxims, the first half of the maxim of quantity. It is commonplace for Malagasy speakers not to provide the amount of information requested by their conversational partners, and Keenan attributes this tendency to a general reluctance among Malagasy speakers to release new information. She lists several peculiarities of the Malagasy speaking community that are collectively responsible for this attitude. First, new information is highly valued, and people worry that releasing it freely puts them in a disadvantageous position. Second, Malagasy speakers are extremely sensitive about revealing information concerning others, especially when the information is not favorable and they may be blamed for putting others in a difficult position by divulging too much information. Such non-Gricean behavior is taken by Keenan to be evidence against the universality of Grice's theory. However, the facts reported by Keenan can be interpreted slightly differently. While Gricean principles are overall consistent across various linguistic communities, how individual communities 'rank' the maxims may be different, or additional culture-specific social norms may contextualize the application of maxims in such a way that linguistic outcomes differ noticeably. We regard Gricean principles as the default setting for conversation in any language (cf. Horn 1984) but allow for the possibility of the maxims or other principles like politeness being re-ranked to bring linguistic activities into conformity with particular cultural standards of a given community.

In Japanese, the most significant pragmatic concept not included in the original Gricean formula would be politeness. As mentioned in the previous section, the importance of politeness has been raised by a number of authors who work within the framework of Gricean pragmatics. As a language that has formalized the marking of politeness in an intricate way, Japanese clearly places great significance on the expression of politeness. The Gricean maxim most likely to be impacted by considerations of politeness is the maxim of manner. As mentioned above, being conventionally indirect is one strategy in showing politeness (Brown and Levinson 1978), and being indirect is directly at odds with some of the maxims of manner, in that indirect expressions are usually more lengthy and obscure. It is unclear, however, how one can reliably quantify the level of indirectness employed in Japanese and how that compares with that of other languages. Meaningful discussion of this matter would require substantial sociolinguistic data, and such an endeavor is beyond the scope of this chapter. I will therefore focus here solely on a limited selection of observable grammatical phenomena relevant to politeness. First, it may be argued that there are cases of lexicalization of indirectness that are indicative of the degree of indirectness tolerated in Japanese. For instance, certain Japanese modal expressions morphologically embody more than one logical operator. Many of these occur in conditional forms, and some involve negation. The following are a few examples whose surface forms are rather complex but which are nonetheless used very frequently (for further discussion of these and other modal expressions in Japanese, see Kaufmann and Tamura, this volume).

- (15) a. ... *si- na kereba- nar- ana- i.*  
 ... do- NEG- COND- become- NEG- NPST  
 'Lit: not be good if not do'  $\approx$  must (deontic)
- b. ... *ka-mo sir-e- na- i.*  
 ... Q-even come.to.know-POT- NEG- NPST  
 'Lit: cannot know whether even ...'  $\approx$  may (epistemic)
- c. ... *ni tigai- na- i*  
 ... DAT mistake- exist.NEG- NPST  
 'Lit: not be incorrect ...'  $\approx$  must (epistemic)

A more obvious grammatical effect of politeness in Japanese is seen in the honorific system. Since honorific morphemes and other related lexical items encode politeness as their lexical denotation, their meanings are conventional. Potts and Kawahara (2004), for instance, argue that the honorific contributes to conventional implicature, in terms of a level of expressive meaning calculated within a multi-dimensional scheme of meaning proposed by Potts (2005). One can argue, however, that there are also conversational implicatures generated because of this linguistic convention.

- (16) *Sakamoto-san wa moo kaer-imasi-ta ga Hosono-san*  
 Sakamoto-Mr. TOP already go.home-POL-PST but Hosono-Mr.  
*wa mada o-kaer-ini-nar-imas-en.*  
 TOP yet HON-return-INF-DAT-become-POL-NEG.NPST  
 'Mr. Sakamoto has gone home already, but Mr. Hosono has yet to go<sub>HON</sub> home.'

The presence of the honorific form in the second conjunct conventionally implicates that the speaker has a respectful attitude towards Mr. Hosono. In contrast, such a high degree of respect is not indicated for Mr. Sakamoto. However, this does not necessarily entail that a lack of high respect is conventionally specified in the plain form. One can reasonably argue that the plain form is unmarked for politeness but the presence of a more polite option and the speaker's choice of not using it leads to a lower level of respect expressed here. In other words, this implicature can be seen to be conversational, rather than conventional.

### 3.3 Q-implicatures and expectation of informativity

Q-implicatures may be triggered by processes such as those described in Section 2.1 In many cases, however, the generation of a Q-implicature is heavily influenced by the level of concreteness expected, which in turn can be context dependent. For instance, the sentence 'Maria is a scientist' may or may not implicate that the speaker does

not know what scientific sub-discipline Maria is an expert in. In some contexts, this meaning is generated as an implicature.

- (17) A: *I just learned that my new neighbors are all scholars. One is a German philologist, and another is a criminologist. Do you know what the third person does?*  
 B: *He is a scientist.*  
 ⇨ The speaker does not know what scientific discipline the third person is in.

In this context, it is natural to speculate why the speaker did not make a stronger statement by naming a particular scientific discipline, and the most likely reason is that she does not know. Thus, the generation of an implicature that the speaker is ignorant of a stronger alternative can depend on the utterance context. However, it is also possible for the level of expectation to be conventionally controlled, and in that case, one can imagine the possibility of cross-linguistic variation in Q-implicatures generated. Suppose that we compare some sentence S in language A and its closest counterpart S' in language B. Let us further suppose that the semantic denotations of S and S' are equivalent. Then, is it guaranteed that S and S' have the same implicature(s) in the two languages? Not necessarily. Imagine that S and S' contain the words W and W', respectively, which are semantically equivalent but do not come with the same level of expectation regarding informativity. In such a situation, we may observe a difference in conversational implicatures that is rooted in a particular linguistic convention, namely the lexical property of W and W' used in the sentences. In what follows, we will see some examples of this sort.

Matsumoto (1995) notes the following contrast between English and Japanese.

- (18) a. *This is Andrew's brother Peter.* (=Matsumoto 1995, (10a))  
 b. *Kotira wa Takasi-kun no kyoodai no Mitio-kun desu.*  
     this TOP Takashi-Mr. GEN brother GEN Michio-Mr. COP-NPST  
     'This is Takashi's brother Michio.' (=Matsumoto 1995, (11a))

While the English example does not generate any noticeable Q-implicature, its Japanese counterpart implicates that the speaker does not know whether Michio is Takashi's older brother or younger brother. This difference can be traced back to the availability of alternative lexical forms to *brother*, on the one hand, and *kyoodai*, on the other. Japanese has lexical forms that are more specific in meaning than *kyoodai* – *ani/o-nii-san* for older brother and *otooto* for younger brother – and the general expectation is that a speaker would use one of these more specific forms if the age difference between Michio and his brother is known to him. Thus, the choice of the less specific term *kyoodai* triggers a comparison with those more specific terms, and the

observed Q-implicature is generated. English *brother*, by contrast, has no such lexical alternatives specific to age. A similar contrast is found between Korean and Japanese.

- (19) a. *Youngme-hanthey- nun oppa hana, unni hana,*  
 Youngme-DAT- TOP older.brother one older.sister one  
*kuliko tongsayng-i hana iss-ta.*  
 and younger.sibling-NOM one be-IND  
 ‘Youngmee has one older brother, one older sister, and one younger sibling.’  
 (Matsumoto 1995, (12a))
- b. *Taroo ni wa ani ga hitori, ane ga*  
 Taro DAT TOP older.brother NOM one older.sister NOM  
*hitori sosite sita ni moo hitori i-masu.*  
 one and under LOC more one exist-POL-NPST  
 ‘Taro has one older brother, one older sister, and another one below him in age.’  
 (Matsumoto 1995, (13))

In Korean, the word *tongsayng* is used to refer to a younger sibling of either gender. Due to the existence of gender-specific forms in Japanese (*otooto* for younger brother and *imooto* for younger sister), however, the general expectation is that the speaker of (19b) use one of these terms if she knows the gender of Taro’s younger sibling. Failure to do so, as in (19b), generates the ignorance implicature, which is missing in the Korean counterpart.

There are cases of semantic widening of loan words that similarly lead to interesting consequences. The word *daietto-suru*, borrowed from English *diet*, has a meaning in Japanese expanded to include not only dietary restrictions but also physical activities for the purpose of losing weight. Thus, in the context of discussing what one ought to do in tackling an overweight problem, the English and the Japanese sentences below exhibit a difference in implicatures generated.

- (20) Context: A was advised by his doctor to lose weight. When asked what his plan is, A says:  
 I will go on a diet.  
*Daietto-suru tumori desu.*  
 diet-do-NPST intension COP-POL-NPST

While the English sentence carries the Q-implicature that A does not plan any special physical activities as a part of his weight loss program, its Japanese counterpart has no such extra meaning associated with it.

### 3.4 Conventional or conversational?

On the basis of the few examples examined so far, I hope to have shown that it is possible to observe cross-linguistic variation in conversational implicature rooted in differences in linguistic conventions. However, the borderline between conventional and conversational meanings is not always clear, and the danger arises of conventional meaning being misidentified as conversational or vice versa. In what follows, I list three controversial cases which may be analyzed as instances of conversational implicature but which may receive other theoretical interpretations as well.

#### 3.4.1 Contrastive topics

The first case is the contrastive use of the particle *wa*, which is often referred to as the topic marker. (CAPITAL LETTERS in the following examples indicate prosodic prominence.)

(21) Context: Who passed the exam?

- a. *MARI-WA ukar-imasi-ta.*  
 Mari-TOP pass-POL-PST  
 ‘(At least) Mari passed.’
- b. *MARI-ga ukar-imasi-ta.*  
 Mari-NOM pass-POL-PST  
 ‘Mari passed.’

It is often reported that the contrastive topic, such as *Mari* in (21a), marks a contrast with other possible candidates, indicating in this case that, unlike Mari, the other candidates did not pass. However, this characterization makes contrastive *wa* indistinguishable from the focal meaning imparted by canonical nominative *ga* (21b), which provides a complete and exhaustive answer to the question forming the context here. While (21a) may occasionally elicit the same exhaustivity effect, the meaning of (21a) is much more loaded, as pointed out by Hara (2006), among others. It can indicate that the speaker does not know the outcome for other students, as confirmed by the fact that *wa* may be followed by such statements as ‘but I don’t know about the others.’ Such ignorance or lack of confidence on the part of the speaker leads to a scalar meaning akin to ‘at least,’ a meaning that is sometimes obligatory with the use of contrastive *wa*. When contrastive *wa* is combined with a numeral expression, for instance, it obligatorily evokes the ‘at least’ scalar meaning.

- (22) Context: How many guests were at the dinner?  
 ZYUUGO-NIN *wa*/WA *i-masi-ta*.  
 fifteen-CLF TOP/TOP exist-POL-PST  
 ‘(At least) fifteen people were there, (as far as I can tell).’

An example like (22) provides a good basis for a lexicalist analysis of contrastive *wa*. That is, in addition to marking sentence topic, the particle *wa* may be seen as lexically specified for the ‘at least’ scalar meaning in some way or another. Hara (2006), Schwarz and Shimoyama (2011), and Sawada (2012), for instance, endorse such a lexicalist analysis. All appearances are that the meaning in question is conventional, and their conclusion seems justified. It is worth entertaining an alternative analysis, however, as the meaning of contrastive *wa* has some obvious connection to Q-implicatures. The following are paraphrases of the two possible interpretations of (21a).

- (23) a. Mari passed, and the speaker does not know whether the others passed or not.  
 b. Mari passed, and the speaker implicates that the others did not pass.

These correspond to the weak – strong distinction in Q-implicatures discussed in Section 2. The first is the weak version without the Competence Assumption, and the introduction of that assumption strengthens the meaning, yielding the second. In light of this reanalysis of the meaning of *wa* and its connection with Q-implicatures, the following hypothesis presents itself.

- (24) *Total Laissez-faire Hypothesis*  
 Contrastive *wa* generates a set of scalar alternatives, and the Competence Assumption applies optionally.

I call this hypothesis ‘laissez-faire’ because it involves no conventional meanings and lets the standard recipe of Q-implicature do all the work (with or without the Competence Assumption). In (21a), for instance, the focal accent on *Mari wa* generates a set of scalar alternatives such as {*Mari*; *Mari and Erika*; *Mari, Erika and Yuka*}. When the Competence Assumption applies, the exhaustive meaning, that the other two didn’t pass, obtains. Otherwise, the meaning remains weak, indicating that the speaker does not know about the other two.

However, this strategy leaves two important issues unresolved. First, the ‘exhaustive’ meaning of contrastive *wa* is still not identical to the prototypical exhaustive meaning of the non-*wa* counterpart marked with *ga*. Even with this strong, exhaustive interpretation, *wa* indicates that some other relevant information has been left out. This feeling of something being left unsaid sets contrastive *wa* apart from ordinary focal meaning with *ga*. Related to this is the question of what role the particle in (24)

plays that sets it apart from cases where it is totally lacking. The hypothesis does not specify any noticeable contributions of *wa* that provide a clue as to why it must be used.

A possible answer to this is found in a ‘mixed’ approach that posits the involvement of both conventional and conversational meaning. Instead of assigning an implicature to *wa* itself as its conventional meaning, this approach proposes a convention applying to *wa* that *leads* to the scalar implicature. In Tomioka (2010a), for example, it is suggested that *wa* signals the avoidance of the Competence Assumption, as in (25).

- (25) Do not apply the Competence Assumption to the stronger alternatives generated by contrastive *wa*.

Without the Competence Assumption, the hearer is invited to entertain a variety of possible reasons for the speaker’s failure to make a stronger statement. The speaker’s ignorance as to stronger alternatives and her belief that such alternatives are false are both good possibilities. A non-epistemic account is also possible, such as that the speaker refrains from talking about the others due to considerations of politeness. The other two did not pass, and the speaker may not have wished to advertise their failure.<sup>10</sup> In Tomioka (2010b), it is further argued that the effect of (25) is derived via the wide-scope property of a *wa*-marked phrase. Fox (2007) endorses a ‘grammatical theory’ of the Competence Assumption in which the strong implicature is derived by means of the syntactic presence of an Exhaustive Operator, *Exh*, that operates at the level of propositions. The function of *wa* is to ensure wide scope, a function shared by the topical use of the same particle (cf. Jacobs 1984, Krifka 2001, Ebert 2009), allowing a contrastive *wa*-phrase to escape the introduction of exhaustive meaning.

The success of such a conversational implicature analysis of contrastive *wa* depends on whether it can account for facts beyond the basic pattern in (21a). One of the most intriguing issues is the appearance of contrastive *wa* in (limited) embedded environments, which is interconnected with other theoretically relevant questions, such as recursivity of information structure and the localist – globalist debate on how to derive strong Q-implicatures.

### 3.4.2 Actuality in root modals

The second case we will consider is the actuality meaning that accrues in a certain class of modals. Bhatt (1999) argues that the use of an ability modal (e.g., *able to* in English) leads to two distinct meaning patterns.

<sup>10</sup> It is important to note that the avoidance of the Competence Assumption does not mean application of the Incompetence Assumption. Thus, the stronger meaning (the exhaustive interpretation) is not automatically ruled out by avoiding the Competence Assumption.

- (26) a. *John was able to eat five apples in an hour.* (=Bhatt 1999: 173, (314))  
 b. *Yesterday, John was able to eat five apples in an hour.* (=Bhatt 1999: 173, (315a))  
 c. *In those days, John was able to eat five apples in an hour.* (=Bhatt 1999: 173, (315b))

If (26a) is understood to be an episodic statement, as in (26b), it seems to mean that John actually ate five apples in an hour. Under the past generic interpretation as in (26c), on the other hand, there is no such meaning. It could be that John never actually ate five apples in an hour. Of course, the speaker might have said (26a) based on her knowledge that he once did actually eat five apples in one hour. Bhatt notes that the difference is intimately tied to an aspectual difference, and that languages that encode the perfect-imperfect distinction are able to disambiguate these meanings. The following are relevant examples from Greek (Bhatt 1999: 175, (319)).

- (27) a. *Borusa na sikoso afto to trapezi ala en*  
 can-IMPF-1s na lift-NPST-PERF-1s this the table but NEG  
*to sikosa.*  
 it lift-IMPF  
 ‘(In those days), I could lift this table, but I didn’t.’  
 b. *Boresa na tu miliso #(ala en tu*  
 can-PST-PERF-1s na him talk-NPST-PERF-1s (but NEG him  
*milisa)*  
 talk-PST-PERF  
 ‘I could have talked to John (but I didn’t).’

Japanese seems to belong to the same group as English in this regard. There is no morpho-syntactic distinction in Japanese that marks the perfect-imperfect contrast, and we would therefore expect Japanese to follow the English pattern. At first glance, this prediction seems borne out.

- (28) a. *Kinoo Maya wa hyaku-meetoru o zyuusan-byoo de*  
 yesterday Maya TOP 100-meters ACC 13-seconds TMP  
*hasir-e-ta.*  
 run-POT-PST  
 ‘Yesterday, Maya was able to run 100 meters in 13 seconds (and she did).’



- b. *Waka-i koro nara Maya wa hyaku-meetoru o*  
 be.young-NPST time COP.COND Maya TOP 100-meters ACC  
*zyuusan-byoo de hasir-e-ta.*  
 13-second TMP run-POT-PST  
 ‘When she was young, Maya was able to run 100 meters in 13 seconds (it  
 may be the case that she never did).’

However, it is rather easy to cancel the actuality meaning in (28a) by adding such expressions as *hontoo-ni hasir-ita-kereba* ‘if she really wanted to run’ or *hasir-oo-to omo-eba* ‘if she put her mind to running.’ In this respect, the actuality meaning is much more like a conversational implicature.

If this is a conversational implicature, how does the implicature come about? As pointed out by Horn (1984), the typical Q-principle reasoning would predict the opposite. The modalized sentence does not entail the extensional version: that Maya was able to run does not entail that Maya actually ran. If Maya did run, on the other hand, it must be the case that she had the ability to run. This means that the sentence *Maya ran* is stronger than *Maya was able to run*. According to the standard quantity-based reasoning, the speaker is assumed to have chosen the weaker option because she believes that the stronger sentence is false (or she has no belief as to the truth of the stronger alternative). Obviously, this reasoning leads to an incorrect implicature in this case. To obtain the actuality implicature, one must employ the relevance-based implicature (i. e., Horn’s R-implicature). That is, what the speaker meant by *Maya was able to run* was that Maya was able to run and did so, but the second conjunct was omitted as the speaker assumed that it was clear enough to be left out.

While such relevance-based reasoning provides a vehicle to generate the actuality implicature, it raises a new set of questions. First, why does this reasoning entirely take priority over the other alternative (i. e., the quantity-based reasoning) so that there is not even an ambiguity? Second, why is this reasoning only applicable to past tensed (episodic) modals? As (29) shows, the present tense does not generate a comparable actuality implicature.

- (29) a. *Masa can/is able to be in cold water. ≠ Masa is in cold water.*  
 b. *Masa wa tumeta-i mizu no naka ni i-rare-ru.*  
 Masa TOP be.cold-NPST water GEN inside LOC be-POT-NPST  
 ‘Masa can/is able to be in cold water’ ≠ Masa is in cold water.

No comprehensive solution to this has yet to present itself, but some speculations can be made. Having the ability to do something is typically an individual-level predicate (Carlson 1977, Kratzer 1995) that denotes a property that does not change easily over time. Putting such predicates in ‘temporally bounded’ contexts forces a reanalysis of their meaning.

- (30) a. *Paula was blond yesterday.*      ↗ Paula dyed her hair.  
 b. *Lucia was (being) naughty yesterday.*      ↗ Lucia behaved naughtily yesterday.

This type of ‘aspectual coercion’ is an important key to understanding the behavior of ability modals in the past tense, as argued in Homer (2010). In (28a), for instance, putting the property of being able to run 100 meters in 13 seconds in a past episodic statement leads to the supposition that the property does not hold after that episode. That is what ‘temporally bounded’ means, but how could one lose such an intrinsic property after one day? The actuality meaning generated via R-based reasoning makes just such an interpretation possible. While it may be hard to imagine Maya’s ability to run fast coming and going in one day, Maya’s ability to run fast and her actually doing so may be temporally bounded in one day by virtue of her running fast being actually materialized that particular day.

A possible answer to the second question comes from the way a language expresses counterfactuality. In some languages, canceling the actuality meaning can be achieved quite effectively by using dedicated counterfactual morphology. According to the generalization of Iatridou (2000), the elicitation of counterfactual meaning with past events requires two past tense morphologies. Past tense is characterized by Iatridou as an operator that excludes some indexical element. Temporal past tense excludes the time of utterance whereas intensional past tense excludes the world in which the utterance is made. For some morphological or syntactic reason, it is not possible to combine two past tense morphologies in this way within one finite clause in Japanese. This means that a crucial ingredient of counterfactuality is missing.

- (31) a. \* *kai-te-rare-ta*  
 write-PST-be.able-PST  
 ‘was able to have written’  
 b. \* *kai-ta koto ga deki-ta*  
 write-PST NMLZ NOM be.able-PST  
 ‘was able to do having written’

The lack of dedicated counterfactual marking in ability modals makes it impossible to conventionally assign actuality meaning to their episodic past tense. In other words, a difference in linguistic convention (i. e., the presence or absence of counterfactual morpho-syntax) may lead to a conventional – conversational distinction in the way actuality implicatures are generated.

### 3.4.3 Ignorance meaning with *wh-ka*

In theories of (in)definite descriptions couched in terms of the familiarity-novelty distinction (e.g., Heim 1982, Kamp 1981), indefinite expressions function to introduce new discourse referents. However, this notion of novelty is in principle independent of the speaker's knowledge about the novel referent. In uttering 'Anna met a woman', for example, the speaker may or may not know the identity of the person that corresponds to the indefinite description. In some languages, however, there are certain indefinites, called *epistemic indefinites*, that signal the speaker's ignorance on this matter. For instance, Spanish indefinites headed by *algún* exhibit such a property.

- (32) *María está saliendo con algún estudiante del*  
 Maria is dating with algún student  
*departamento.*  
 from.the department  
 'Mara is dating a student from the department (the speaker does not know who).'
- (Alonso-Ovalle and Menéndez-Benito 2010)

Sudo (2010) notes that a similar pattern can be found with Japanese indefinites that take the form *wh+ka*.

- (33) a. *Zyon wa kinoo dare-ka ni at-te-ta yo.*  
 John TOP yesterday who-Q DAT meet-PROG-PST SFP  
 'John was meeting with somebody yesterday.'
- b. *#Honto? Aitu dare ni at-te-ta?*  
 really he who DAT meet-PROG-PST  
 'Really? Who was he meeting with?' (Sudo 2010, (4))

The response in (33b) is considered infelicitous because (33a) indicates that the speaker is ignorant of the identity of the person that John met yesterday. Alonso-Ovalle and Shimoyama (2013) propose, following Kratzer and Shimoyama (2002) and Alonso-Ovalle and Menéndez-Benito (2010), among others, that this ignorance meaning is a conversational implicature. As an epistemic indefinite, *wh+ka* signals 'epistemic modal variation': the person satisfying the indefinite description varies across the speaker's belief worlds, meaning that the speaker is not certain who the person is. The ignorance component is generated as a Q-implicature as the result of negating stronger alternatives. The steps of this implicature generation go as follows. First, let the domain for the indefinite be {Anna, Bertha, Carla}. The proposition asserted in (33a) is (34a), where  $\Box$  symbolizes the necessity operator. There are stronger alternatives to this, shown by the set in (34b), that are generated by restricting the domain to atomic entities. The negation of those stronger alternatives leads to the expected

Q-implicature; the speaker is not certain which of the three candidates is the one John met.

- (34) a. Asserted:  $\Box (J \text{ met } A \vee J \text{ met } B \vee J \text{ met } C)$   
 b. Stronger Alternatives:  $\{\Box (J \text{ met } A), \Box (J \text{ met } B), \Box (J \text{ met } C)\}$   
 c. Q-implicature = Negation of all members in (34b):  
 $\neg\Box (J \text{ met } A) \wedge \neg\Box (J \text{ met } B) \wedge \neg\Box (J \text{ met } C)$

Alonso-Ovalle and Shimoyama (2013) list the following properties as evidence for the implicature status of the ignorance meaning: (i) The ignorance meaning can be reinforced (by adding a sentence like ‘but I don’t know who’) without any sense of redundancy, (ii) it can disappear in downward entailing contexts, as shown in (35a), and (iii) it can be canceled, as in (35b).

- (35) a. *Ken wa dare-ka gengogakka no gakusei to*  
 Ken TOP who-Q linguistics.dept GEN student COM  
*tukiat-tei-ru no dewa-na-i.*  
 date-PROG-NPST NMLZ COP-NEG-NPST  
 ‘It’s not the case that Ken is dating a student in the linguistics department.’  
 (= Alonso-Ovalle and Shimoyama 2013, (14))
- b. *Ken wa dare-ka gengogaku no gakusei to*  
 Ken TOP who-Q linguistics GEN student COM  
*kekkon-si-ta. Zituwa dare-da-ka sit-te-ru.*  
 get.married-do-PST in.fact who-COP.NPST-Q come.to.know-RES-NPST  
 ‘Ken married a linguistics student. In fact, (I) know who it is.’  
 (= Alonso-Ovalle and Shimoyama 2013, (15))

However, the status of the ignorance meaning as a Q-implicature is not universally endorsed. Sudo (2010), whose analysis inspired Alonso-Ovalle and Shimoyama (2013), draws the opposite conclusion that the ignorance meaning associated with *wh+ka* is not a conversational implicature. One of his objections to the implicature analysis is the lack of relevant alternatives required for the computation of Q-implicatures. While it would seem natural, for example, for German *irgendein* ‘some’ and Spanish *algún* ‘some’ to be interpreted in comparison with the ordinary indefinites, *ein* and *un*, respectively, as there are clear morphological connections between the two types, it is not at all clear what is to be compared with *wh+ka* in Japanese. This is yet another instance, if Sudo is correct, where a fact about a linguistic convention (i. e., the existence of a comparable default indefinite) can change the landscape of conversational implicatures across languages.

## 4 Concluding remarks

The continuing widespread popularity of conversational implicature as a fundamental concept in the fields of pragmatics, semantics, and beyond is well justified even though the theory of conversational implicature as originally proposed in Grice (1975) has undergone a number of transformations. The notion of cross-linguistic variation in how conversational implicatures are generated is a relatively new research area, but it shows clear signs of developing, and its scope promises to expand even further as research progresses in these fields. There is also increasing interest in experimentally testing theoretical claims regarding implicatures in these fields, and more and more fruitful collaboration between theorists and experimentalists on the topic of conversational implicature can be expected to emerge in the future.

Most of the Japanese phenomena reported in the chapter were only recently brought to the arena of theoretical investigation. Naturally there is still controversy and disagreement as to whether these phenomena represent instances of conversational implicature, and some of the phenomena considered here may not be relevant to conversational implicature at all. This chapter should not therefore be taken as a report on established research on Japanese conversational implicature but rather as an encouragement to tackle through continuing research the contentious issues surrounding this concept that is so vital and central to many linguistic disciplines.

## Additional abbreviations

IMPF – imperfective, NPST – nonpast, POT – potential, TMP – temporal

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## 18 Japanese fillers as discourse markers: Meanings of “meaningless” elements

### 1 Introduction

Fillers are said to be used by speakers to “fill in pauses.” They are commonly considered to be the most peripheral of all elements to linguistic structure and meaning, with a theoretical status that is dubious at best.

In this chapter I will argue for a treatment of fillers as belonging to the category of “discourse markers,” the definition of which, and potential reservations about which, will be discussed in the next section. Fillers appear to be devoid of propositional or referential meaning, and they are typically not syntactically integrated into sentences or utterances. In fact, one of the canonical properties of fillers and other discourse/pragmatic markers (or particles) by which scholars have defined them (e. g., Schiffrin 1987; Schourup 1999; Fischer 2006; Fraser 2006) is precisely that they do not contribute propositional meaning to and are not syntactically integrated into sentences. Often associated with hesitation or disfluency, and having no apparent semantic content, they were once regarded as forms of “linguistic detritus unworthy of close attention” (Schourup 1999), often not even included in the inventory of forms targeted for study in discourse/pragmatic research. More recently, however, fillers have come to receive increasing attention as “a testing ground for hypotheses concerning the boundary between pragmatics and semantics” (Schourup 1999: 238). Despite their peripheral and marginal status, they can exhibit significant pragmatic meanings, especially in interactional contexts. This chapter describes the pragmatic meanings that Japanese fillers have been found to have in past research and where those meanings might possibly come from, even though they may lack intrinsic content in terms of propositional or referential meaning.

In what follows, I will first clarify terminological issues surrounding the terms “filler” and “discourse marker,” followed by an overview of methodological approaches often adopted in previous studies of these. I will then present an overview of Japanese fillers targeted in previous studies, with particular attention to their types and frequency of use, as background to a discussion of their pragmatic meanings and functions and possible source(s) of these meanings. My discussion will be organized in terms of the degree to which fillers appear to have lexical status, ranging from those that appear to be less clearly lexical (e. g., *etto*) to those that are considered to have derived from lexical items (e. g., *maa* ‘rather’ and *yappari* ‘as expected’). Though the focus of this chapter is on Japanese fillers, some studies on English fillers are also briefly reviewed wherever useful. This is because discourse markers and fillers are the most researched in English of any language (Aijmer and Simon-Vandenberg 2011),



so that studies of English fillers can provide important insights into what is known about the pragmatic meanings of fillers and point to potentially fruitful avenues of research for analyzing them.

## 2 Terminological issues: “Fillers” and “pragmatic markers”

### 2.1 Fillers

Research on the role played by disfluency or hesitation in language production processes has traditionally recognized pauses of two types: unfilled and filled (e. g., Goldman-Eisler 1968). “Unfilled pauses” represent silence, whereas “filled pauses” are those filled by non-lexical vocalization or elements whose lexical status is not clear. Albeit of dubious lexical status, filled pauses are often filled with well-recognized language-specific elements such as *er/erm* in British English, *uh/um* in American English (e. g., Stensröm 2011), and *ee/etto(o)* in Japanese (e. g., Tanaka 1981; Watanabe, et. al. 2008). Parentheses such as in *etto(o)* will be used in our transcriptions to indicate optional elements, in this case vowel lengthening. Such variability of phonological form is in fact one of the characteristics of fillers. In the rest of this chapter, some variability of this kind is assumed, and one form without parentheses will typically be given (e. g., *etto*) even where such variability exists (e. g., *ettoo*, *ettoo*), unless parenthetical notation is used in the research cited or it is otherwise important to distinguish between different forms using parenthetical notation.

The linguistic status of such elements, as to whether they can be regarded as words, and which parts of speech they belong to, is controversial. For instance, Takubo (1995, 2005) classifies Japanese fillers as subtypes of *kandoosi* (‘interjections’) while also considering them to have a status situated somewhere between linguistic elements and spontaneous physiological vocalizations (1995: 1023). Norrick (2012: 262) also considers English fillers to be a subtype of interjections, regarding them as “pragmatic markers.” He observes that such interjections as *mhm*, *mm*, *um*, and *uh* seen in the London-Lund Corpus “function within the participation framework of discourse, serving mainly to pass or hold the turn and fill pauses.” A similar function can be recognized for Japanese fillers, as will be discussed in Section 4.5 of this chapter. One of the questions to be addressed in this chapter, then, is how fillers can have such pragmatic meaning if they are devoid of meaning.

Hesitation/disfluency can also be observed in the use of “verbal fillers,” fillers that are more easily recognized as lexical or phrasal. Lexical fillers include expressions such as *you know*, *sort of*, *like*, and *well* in English and *ano* ‘uh, lit. that’, *nanka* ‘lit. somehow’, *maa* ‘rather,’ and *yappari* ‘lit. as expected, after all’ in Japanese. Verbal

fillers form a controversial category (Stensröm 2011: 540) because some of them can have propositional content in some contexts, as seen in the literal translation of the Japanese examples above (e. g., *ano* meaning ‘that’), but are considered to be fillers in contexts where they only add to the pragmatic character of an utterance.

This kind of polysemy of lexical fillers is notable for the importance it may have for the relationship between semantics and pragmatics (i. e., propositional content meaning versus pragmatic meaning). For this reason, many scholars (e. g., Maschler and Schiffrin 2015) are wary of separating the content meaning from the pragmatic meaning of a given form and regarding the two as distinct homonymous words (i. e., one a non-filler word with a recognized meaning and one a filler, the same in form as the first, but independent from it and without any obvious meaning). The important question with regard to this type of filler is whether and how the different meanings, the propositional/referential meaning and pragmatic meaning, are related.

In Japanese linguistics, many scholars consider both non-lexical and lexical fillers as subtypes of *kandoosi* (lit. ‘emotion words’) as in Takubo (1995, 2005), mentioned above. Takubo (2005) further regards fillers as *kantoosi* (lit. ‘interjections’). Various other terms have also been used to refer to Japanese fillers (see Yamane 2002, who surveys various labels in her extensive overview of previous studies). Lexical fillers such as *nanka*, are seen to have the character of being derived from adverbs (Takubo 2005).

In this chapter, I will define “fillers” as elements that lack a propositional meaning and that *appear* to “serve mainly to pass or hold a turn and to fill pauses,” including both non-lexical elements that typically occur in filled pauses and lexical fillers. Other researchers regard certain response tokens that mainly appear in the initial position of utterances (e. g., *yeah* in English, *saa* ‘let’s see’ and *un/hai* ‘yeah/yes’ in Japanese) to fall under the category of fillers, called *ootoosi* ‘response words’ in the Japanese literature. In the current chapter, I focus only on items that are often associated with disfluency, occurring primarily either in utterance-initial or utterance-internal positions. Though I also consider phrases such as *soo desu ne* ‘That’s right, isn’t it’ and *nante iu n daroo* ‘How shall I put it?’ as fillers, in this chapter I will focus on recognized “non-lexical” fillers and lexical fillers mostly consisting of single elements/words except in cases where phrases are included in studies cited in this chapter. Other elements that are regarded as fillers by some scholars but which are not included in this chapter include the connective *de* ‘and,’ the attention seeker *hora* ‘look!’, utterance-initial response tokens, and *a* ‘ah’, an utterance-initial interjection to indicate noticing. This is because these have more readily recognized meanings and are not always regarded as fillers.

The primary questions addressed in this chapter are what kinds of meanings can be seen in fillers and how such meanings might have come about. Norrick (2012: 263), for example, observes that some fillers do “more than simply fill a pause and hold the turn” by “signaling some sort of difficulty in responding to the foregoing turn.” There is overwhelming evidence that such elements indeed have pragmatic mean-

ings that may justify treating them as “pragmatic markers” (or “pragmatic particles” because most such elements are small units). While there is no consensus on this at the present time, we will see in what follows that there are at least sufficient grounds to view these as “discourse markers.”

## 2.2 Discourse or pragmatic? Particles or markers?

There is little consensus with regard to how pragmatic or discourse particles/markers should be defined, what they should be called, and what elements are to be included in this category – especially as to whether to include fillers such as *uhm* and *erm* (Aijmer and Simon-Vandenberg 2011: 228). In this section we consider some terminological issues surrounding the terms “pragmatic (markers/particles)” versus “discourse markers” in order to shed light on the question of how to categorize fillers. Fischer (2006: 6–7), for example, considers discourse markings to form a subset of pragmatic functions, and hence views “discourse markers” as subtypes of “pragmatic markers.”

There appear to be at least two interpretations of the expression “marking.” One is where the element in question is regarded to mark some kind of unit or relationship between units. In this vein, Schiffrin (1987: 31) defines “discourse markers” as non-obligatory utterance-initial items that are “sequentially dependent elements which bracket units of talk.” Fisher (2006) states that the concept of marking relationships between discourse units would have to be pushed very far if elements such as interjections and hesitation markers are to be included. Perhaps for this reason, fillers are not always classified as discourse markers (e.g., Fraser 1999; Schourup 1999). In the discourse model proposed by Schiffrin (1987), however, there are several different planes relevant to discourse structure, namely participation framework, information state, ideational structure, action structure, and exchange structure, within the context of which different markers work to connect utterances in different ways. Fillers can be seen to have functions on several of these planes, as suggested in the description of fillers presented in Norrick (2012). Moreover, “marking” can alternatively refer to the function of “a signpost or signal instructing the hearer how the message should be interpreted” (Aijmer and Simon-Vandenberg 2011: 227), a function that also has potential relevance to fillers.

The term “discourse marker” is regarded as a term “with the widest currency and with the least restricted range of application,” enabling the inclusion of “a broad array of elements under a single conceptual umbrella” (Jucker and Ziv 1998: 2). Their functions include “discourse connectors, turn-takers, confirmation-seekers, fillers, prompters, repair markers, and hedging devices” (Jucker and Ziv 1998: 1). The term “marker” is regarded as placing stronger emphasis on the functional aspect (e.g., what it marks and how) of the element in question while the term “particle” has traditionally been a syntactic term that foregrounds the formal aspect of the element,

namely, that it is a “small, uninflected [word] that [is] loosely integrated into the sentence structure” (Fischer 2006: 4).

Pertinent to fillers, the definition of “discourse marker” given by Maschler and Schiffrin (2015) explicitly includes marking of cognitive processes. For Maschler and Schiffrin, the most essential characteristic of discourse markers is that they have a “metalingual interpretation” in the context, something that can be related to the text, to interpersonal relations, or to cognitive processes. Maschler and Schiffrin state that cognitive discourse markers exhibit “the speaker’s cognitive processes and they include elements like *uhm* uttered when processing information” (Maschler and Schiffrin 2015: 196–197).

Taking conceptual frameworks such as those presented above as my foundation, I will henceforth treat fillers in this chapter as discourse markers, exploring both the range of forms and range of meanings they exhibit, as brought to light in previous studies.

## 2.3 Theoretical and methodological approaches to discourse markers

Terminological variations such as those mentioned above do not necessarily reflect theoretical and/or methodological differences among researchers (Foolen 2011). Discourse markers were first targeted for study within the framework of discourse analysis presented in Schiffrin’s seminal study (1987), and many studies on Japanese discourse markers followed suit, but these markers have subsequently been studied from a range of different theoretical and methodological perspectives. While earlier studies often relied on data generated by researchers, recent research has largely been based on the analysis of fillers appearing either in elicited discourse (e.g., role-plays) or natural discourse. The increasing availability of corpora such as the Corpus of Spontaneous Japanese (CSJ) developed for Japanese at the National Institute for Japanese Language and Linguistics has facilitated the study of fillers in natural discourse. Studies based on experiments and questionnaires have also increased in frequency.

Given that discourse markers have significant pragmatic functions, the groundbreaking contributions to pragmatic theory made by Grice’s (1975) Cooperative Principle and corollary conversational maxims have provided a useful framework for accounting for aspects of the meaning of such markers that are not literally expressed, but are rather generated as implicatures through application of these maxims.<sup>1</sup> More recently, however, relevance theory (e.g., Blakemore 2002) has come to the fore as “a rather productive framework” (Foolen 2011: 219) for the analysis of pragmatic markers and has been widely applied to account for the meanings of English dis-

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<sup>1</sup> See Tomioka (this volume) for a discussion of conversational implicature in Japanese.

course markers and fillers (e.g., *like*, as treated in Andersen 1998). This is a cognitively oriented approach to communication that focuses on psychological processes in verbal comprehension (e.g., Sperber and Wilson 1995; Wilson and Sperber 2012). It distinguishes between sentence meaning and speaker's meaning, as in the Gricean framework, and views the function of words and markers as not to encode meanings, but rather to provide a point of departure for the hearer to make an inference that follows from assuming the utterance to be relevant to its context. Diverging from the Gricean framework, the hearer in this framework infers both what is said (explicature) and what is not said (implicature), presuming every utterance to be optimally relevant. Discourse markers in this approach function to provide procedural guidance to the hearer as to how to interpret what is said.

Particularly useful for understanding the polysemy of lexical fillers is the concept of grammaticalization (Traugott 1982). Traditionally, this concept was used to account for the meaning of grammatical elements in terms of diachronic changes undergone by content words (e.g., nouns, verbs). Traugott (1995: 2) provides an example of this in the English verb *go* in *be going to*, where the original meaning of motion has weakened or “bleached,” and inferences of intention and futurity are instead invited. In a similar vein, Traugott (1995) proposes an account of the grammaticalization of English adverbs into discourse markers along a path of semantic/functional change from verb adverbial to sentence adverbial, adjunct, and finally discourse marker. However, because the change from adverb to discourse marker involves a shift to less structural integration, some scholars (e.g., Aijmer 1997) regard such a change as instead an instance of pragmaticalization. Traugott (2012) nevertheless maintains that grammaticalization is primarily a functional change and that change to a discourse marker is nothing more than change to “a highly procedural grammatical marker” – although the discourse markers she discusses (e.g., *surely*, *no doubt*) have a higher degree of lexical content than fillers.<sup>2</sup>

### 3 Fillers in Japanese: An overview of past classifications

This section presents an overview of Japanese fillers targeted in previous studies by way of an introduction to the fillers that we will discuss subsequently.

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<sup>2</sup> Onodera (2004) provides a grammaticalization account of Japanese discourse markers, but her work focuses primarily on connectives such as *demo*.

### 3.1 Frequently used Japanese fillers

What kinds of fillers are most frequently observed in Japanese depends on various factors, most notably contextual ones such as formality and genre of speech. Studies have shown that Japanese speakers use fillers more frequently in formal than informal contexts (Nagura 1997; Philips 1998; Yamane 2002). Fillers used most frequently in Japanese have been identified in a number of previous studies, including Kawada (2010), Nakagawa and Kobayashi (1995), Nakajima (2009), Nagura (1997), Nomura (1996), Philips (1998), and Yamane (2002). Among non-lexical fillers (typically vocalizations of vowels, both short and elongated), the most frequently observed is *e(e)* (Nagura 1997; Yamane 2002; Nakajima 2009; Nomura 1996).<sup>3</sup> The most commonly observed lexical fillers are *ano(o)*, *ma(a)* (i. e., both *ano* and *anoo*; *ma* and *maa*),<sup>4</sup> *etto* and *mo(o)* ‘already, more, not anymore.’

The most frequently used lexical fillers can be considered to have derived from non-filler lexical items, with the exception of *etto*, which may be analyzed as a non-lexical filler *e* followed by the quotative particle *to*. The filler *ano* can be linked to the deictic adnominal demonstrative *ano* ‘that over there, away from both of us’, and the other adnominal demonstratives *sono* (that over there, in your proximity) and *kono* (this here, in my proximity) and related forms such as *koo* (like this) also have filler counterparts. Along with non-lexical fillers such as *e*, the lexical fillers *etto* and *ano* are most often associated with “filled pauses” or disfluency caused by problems in smoothly producing language.

All other lexical fillers are associated with lexical items, mostly modal adverbs. The filler *nanka* has a recognizable lexical counterpart *nani-ka* or *nanka* ‘something, somehow’; the morpheme/word *nani* ‘what’ can be used alone as a filler or as part of various phrasal fillers such as *nante iu ka* ‘how shall I put it.’ The filler *maa* is associated with the modal adverb *maa* ‘rather, fairly.’ Though *moo* can also be linked to the adverb *moo* ‘already, more, (not any) more’, it is also recognized as an interjection to express a highly emotional state, as in *moo hontoo ni sugoi* ‘It’s absolutely amazing, really.’ Many of these fillers are considered to have social or interpersonal functions as well.

Though not as frequently used, *yappari* and its informal variants *yappa* and *yappasi* are also among the fillers commonly observed (Nagura 1997; Philips 1998). Not all studies of frequently used fillers include them, however, possibly because *yappari* clearly appears to be lexical in character, a modal adverb with the substantive meaning of ‘as expected, after all.’

<sup>3</sup> Yamane (2002: 238), however, considers *e* as lexical.

<sup>4</sup> Some researchers (e. g., Yamane 2002) take note of the vowel length of fillers and tally *ano* and *anoo*, *ma* and *maa* separately; both variants in each case are common.

### 3.2 Factors determining the choice and frequency of fillers

Though the focus of this chapter is on how fillers that appear to be semantically vacuous can have meanings (or, arguably, “functions”; an objection to the term “function” will be discussed in Section 4.1), we briefly describe here what kinds of factors have been found to affect the frequency and choice of fillers. Findings about speech context and speech genre are especially important because the “meaning” of fillers, as we shall see, relates in part to context, specifically the context of interaction with the addressee(s).

Factors considered in previous studies (Nagura 1997; Philips 1998; Yamane 2002) include the speaker’s gender and age, formality of context, and speech genre. (Although there are slight variations in the full range of fillers considered by each of these researchers, there is substantial agreement among them as to fillers that occur frequently.) All of these studies have found Japanese speakers to use fillers more often in formal contexts (e.g., lectures and meetings, Nagura 1997) than in informal contexts (e.g., informal conversations, Nagura 1997). Nagura (1997) and Yamane (2002) found that men use fillers more frequently than women, but Philips (1998) did not find any such significant difference.

Nagura (1997) examined a corpus of spoken data of different genres by men and women of differing age groups and found that gender and age affected the use of fillers only in informal contexts (e.g., casual conversation). Men in that study frequently used *ano* and *maa*, and older men used *yappari*, while women often used *nanka*, *ano*, and *moo*. Nagura characterized fillers such as *yappari*, *moo*, and *nanka* as “emotion- or intimacy-loaded.” In more formal contexts (lectures and meetings), men and women used the fillers *ee*, *ano(o)*, *ma(a)*, and *sono(o)* similarly. *Nanka* was the filler found in Nagura’s study to be most frequently used in casual conversations among female and young male speakers, a finding echoed in other studies (Emmett 2001; Honma 2011).

Yamane (2002) examined four different genres of natural discourse having different degrees of involvement with the addressee: lectures, voice messages on telephone answering machines, telephone conversations, and TV talk/interview shows. The filler *ma(a)* was used often in contexts where the addressees were physically present (lectures/talks and interviews). In a 2010 study by Kawada, *ma(a)* was found to be used more than other fillers by speakers giving poster presentations. In this and other studies the filler *e(e)* was found to be frequently used in monologue(-like) utterances, such as lectures and voice messages (Nomura 1996; Yamane 2002; Kawada 2010).

The frequent use of *e* in contexts where the speaker addresses the audience without necessarily interacting with the audience suggests that this filler is closely related to speaker production, while such fillers as *maa*, *nanka*, and *yappari* appear to be used in contexts where a higher degree of involvement of the addressee(s) is assumed.



### 3.3 Factors based on language production versus social motivation

Analyzing discourse in Japanese, Maynard (1989) foregrounds the significance of fillers in discourse, considering their use to be one of the features constituting “utterance design in conversational language,” and states that utterances are “designed in response to the context of the situation and sociocultural values of the speech community” (Maynard 1989: 23). She categorizes fillers into two groups: language-production based and socially motivated. Speakers use the former when smooth speech is hindered, and the latter to fill potential silences and avoid potential embarrassment by creating the impression that verbal interaction is being carried on, or to indicate hesitancy and give listeners the impression that they are being less imposing.

Interpersonal functions of certain fillers have been recognized in other languages (e. g., English *you know*), but their significance in the social dimension is typically not given as much prominence as in Maynard’s description of Japanese fillers. She argues that Japanese fillers “play important roles in the language life of Japanese” (Maynard 1989: 32). She illustrates how a relatively high degree of interpersonal involvement is marked by linguistic features such as pauses, indicated below by “/,” final particles (*ne*, *ka*, *sa*, and *nee*), and fillers (*nanka* and *nanka nee*), as in (1) (Maynard 1989: 22).<sup>5,6</sup>

(1)

1. B: → *Soo da ne/ nanka/ sore mo sa natu*  
           so COP.NPST SFP like that also SFP summer  
           *da kara de sa/ nanka nee kekkyoku*  
           COP.NPST since COP.GER SFP like SFP finally  
           *nee/ mizika-ku kattyat-te nee/*  
           SFP be.short-INF clip-GER SFP  
           ‘Yeah, that was also in the summer, and ah ... so somehow in the end  
           they did clip the hair (of a pet dog) short’.
- (A: 1 *Aa yappari?*)  
           ah after.all  
           ‘That’s what I thought.’

<sup>5</sup> Maynard uses “/” to mark recognizable pauses. We have not adopted this notation in other examples in this chapter except where it appears originally in a cited work.

<sup>6</sup> The romanization, literal glosses (including grammatical abbreviations), and free English glosses (translation) appearing in examples cited from other works have either been added by the current author, when they are not present in the original, or have been modified by the current author as necessary to conform to the conventions adopted in this volume or for the sake of added clarity of meaning.



2. → *Un/ nanka baribari to ka it-te-ta/*  
 Yeah like MIM QUOT Q say-PROG-PST  
*mi-te-na-i kedo./*  
 see-RES-NEG NPST although  
 ‘Yeah, they said they clipped the hair real short, and the hair got coarse  
 although I haven’t seen it.’

She notes that *nanka* in (1.2) may be “voiced simply to make the utterance softer and less impactful” (31). Though Maynard does not examine specific fillers in depth, her observations with regard to the social functions of fillers are notable.

Yet as Maynard herself also acknowledges, many fillers may occur due both to cognitive and social factors, and these two categories are not mutually exclusive. When a speaker uses fillers upon encountering difficulty in producing language, such fillers by definition fill a potential silence, helping the speaker create the impression that verbal interaction is being carried on.

### 3.4 The purpose of fillers: For the speaker versus for the listener

The distinction between the two types of fillers proposed by Maynard (1989) bears a partial resemblance to another distinction that has been proposed, that between fillers that serve the speaker’s purposes versus the listener’s. Yamane (2002: 220–228), for example, discusses three major functions of fillers that she observes in four discourse genres (lectures, voice messages, face-to-face interaction, and telephone conversations), concerned respectively with the marking of (i) information processing by the speaker, (ii) text organization (e.g., marking unit boundaries, quoting, repairing, rephrasing, etc.), and (iii) interpersonal interaction. She argues that (i) serves the purposes of the speaker, (ii) serves the purposes of both the speaker and listener, and (iii) sometimes serves the purposes of the speaker (e.g., the emotionally charged use of *moo* ‘already too much’), sometimes the purposes of the listener (the *ano* of hesitation, showing consideration to the listener), and sometimes both (*etto*, *e* used to take a turn, or hold the floor). Yamane (2002) cites examples of fillers observed in her study exhibiting functions falling under each of these categories, as follows.

- (i)
  - a. to fill time: e.g., *e*, *ma(a)*
- (ii)
  - b. to attract attention, introduce a topic: e.g., *ano(o)*, *ma(a)*, *e(e)*
  - c. to mark a repair, quote, or example: e.g., *ee*, *ano(o)*, *ma(a)*
- (iii)
  - d. to express hesitancy or mitigation: e.g., *ano(o)*, *ma(a)*

A similar categorization has been adopted in studies of other languages. Stensröm (2011: 544–547), for example, similarly identifies three categories of filler functions, related in turn to “the speaker’s perspective” (e.g., signaling hesitation or a shift in topic, indicating that the speaker is in the process of thinking and planning), “the listener’s perspective” (e.g., giving the listener more time to comprehend and prompting the listener to pay more attention), and “interacting” (e.g., signaling the beginning of a turn, turn-holding, and turn-yielding). However, identifying whose purposes may be served by a filler is not always straightforward, because the listener may be sensitive to production problems encountered by the speaker, and may infer meaning through taking the speaker’s perspective (see, for example, Barr and Seyfeddinipur 2010, reviewed below).

In the next section, we will examine findings related to fillers associated with production problems in English and Japanese, focusing on meanings that have been proposed for such fillers.

## 4 Meanings of language-production-based fillers

### 4.1 Fillers as cognitive discourse markers

Problems encountered by the speaker in language production motivate the use of fillers across languages, but the use of such fillers may in turn function as a signal to the addressee from which the addressee may infer certain kinds of meanings. Clark (2002), examining disfluency in English, proposed that fillers often serve as secondary (termed “collateral” by Clark) signals, by letting the addressee know at what moment the speaker expects to vocalize, what s/he is about to present, what s/he intends to revise or abandon, and much more (Clark 2002: 6).

In a similar vein, Takubo (1995: 1024) discusses the functions of Japanese fillers with regard to cognitive processes that occur during language production. He regards fillers as markers that monitor mental operations and classifies them first by their form into two types: non-lexical (e.g., *ee*, *e* and word-final vowel lengthening) and lexical. He then categorizes the lexical fillers into three types according to their cognitive function: calculating content (*eeto*, *unnto*<sup>7</sup>), searching for the right form (*ano*, *sono*, *kono*), and evaluating (e.g., *maa*, *nanka*, *yappari*). Fillers related to the calculation of content are produced when the speaker searches for a particular piece of knowledge or concentrates on making a computation based on his/her knowledge, while fillers related to searching for the right form are produced when the speaker is engaged in figuring out the best way to convey the content of his/her intended

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7 The filler *unnto* can also be analyzed as a non-lexical filler *uun* followed the quotative particle *to*.

message. Fillers related to evaluation mark the speaker's evaluation at the boundary between prior discourse and to-be-uttered content, the effects of which may be primarily interpersonal. Takubo states, for example, that the evaluative filler *ma(a)* can only be used when an audience is present.<sup>8</sup>

As evidence for these distinct functions, he points to the impossibility of interchanging fillers across these differing categories. Sadanobu and Takubo (1995: 81) illustrate that it is not possible to interchange *eeto* (marker of content calculation) and *ano* (marker of form searching) as shown in (2). If *eeto* in (a) in B's utterance in Line 2 is changed to *ano* as in (b), the utterance becomes awkward and unnatural.

(2)

1. A: *Kondo no eiga no kantoku tte dare da*  
 this.time GEN film GEN director QUOT who COP.NPST  
*kke?*  
 SFP  
 'Who is the director of the next film?'
  
2. B: → a. ***Eeto***, *aa, Staatorekku de Spokku yat-te-ta*  
 FL ah Star.Trek LOC Spock play-PROG-PST  
*hito da, Reonaado Nimoi.*  
 person COP.NPST Leonard Nimoy  
  
 b. ?? ***Ano(o)***, *aa, Staatorekku de Spokku yat-te-ta*  
 FL ah Star.Trek LOC Spock play-PROG-PST  
*hito da, Reonaado Nimoi.*  
 person COP.NPST Leonard Nimoy  
 'Um, ah, the man who played Spock in Star Trek, Leonard Nimoy.'

An important question arises as to whether speakers sometimes intend to convey openly the problems they encounter in production to their addressee, as Clark (2002) suggests. Takubo (1995: 1024) mentions that a speaker may use fillers not only to monitor his/her own cognitive processes, but also to announce to the addressee a delay in the delivery of content and to ask him/her to wait. In his view, the speaker can (but does not always) intentionally use such fillers to bring about certain desired effects. Sadanobu (2010) explicitly problematizes the notion of the use of fillers as an intentional externalization of cognitive processes, arguing that the speaker merely exposes his mental processes to the addressee unintentionally without a communicative purpose. He also contends that the notion of *marking* is problematic, claiming that the speaker does not necessarily have the intention of marking his/her utterance for the addressee. For the same reason, he contends that the concept of "function"

<sup>8</sup> This is unlike the adverb *maa*, which can be used in soliloquy-like utterances.

is inappropriate in discussing the role of fillers. Proposals by Takubo and Sadanobu regarding the meanings of the fillers *etto* and *ano* (Sadanobu and Takubo 1995; Takubo 1995) will be presented in Section 4.4, but as background to that we review in the next section some works on English fillers where similar questions are addressed and relevant empirical findings are reported.

## 4.2 What studies on English fillers tell us: *uh* and *um*

Just as with the Japanese fillers *e* and *etto*, scholars have debated whether English speakers use fillers such as *uh* and *um* intentionally for some communicative purpose. Clark and Fox Tree (2002) argue, on the one hand, that speakers use *uh* and *um* to announce a minor (*uh*) or major (*um*) delay in speaking, providing as evidence data from corpora of spontaneous speech in British and American English showing that *um* is followed by significantly longer delays than *uh*. Utilizing the maxim of relevance (Grice 1975), Clark and Fox Tree suggest that these fillers function to generate implicatures that “follow from the relevance of announcing minor or major expected delays in the current situation” (Clark and Fox Tree 2002: 79). Speakers typically implicate “I am unable to proceed,” but they can also implicate that they want to keep the floor, or that they are thinking about what was just said, for example (Clark and Fox Tree 2002: 90–91). Based on the maxim of relevance, the hearer assumes that what the speaker says is relevant to the current situation and attempts to infer the speaker’s meaning from this.

Gibbs and Bryant (2008) examine answers to questions from strangers about what time it is. Adopting relevance theory, they explain that speakers giving the answer in such contexts strive for optimal relevance and use linguistic and paralinguistic cues including fillers when providing their answers. They argue that fillers in this case are used to procedurally “encode a guarantee that the utterance containing them is indeed relevant” (364). One example that they give to illustrate this is the response “It is um ... 3: 57” to the question “My watch stopped. Do you have the time?,” in which the addressee is likely inferring that the exact time is the most relevant. Gibbs and Bryant (2008: 348) argue that *um* in this utterance “has the procedural function of alerting addressees to the relevance of upcoming information (i. e., the numerical time) that is worthy of the listeners’ continued attention despite the delay in the speaker providing that information.” Their argument seems to assume that the speaker intentionally uses fillers in such cases, but they state that it is not easy to determine whether these cues are in fact produced intentionally or not.

Reviewing studies on the production and comprehension of fillers, Corley and Stewart (2008) conclude that the use of fillers is akin to that of facial gestures or tone of voice. The hearer is merely alerted to the fact that the speaker is in trouble, on the basis of which the hearer expects that something less predictable is forthcoming. Studies have in fact shown empirically that a listener who hears a filler expects

something new to be mentioned. In a study by Barr (2001), for example, participants listened to a description of an image and moved a mouse cursor to one of two shapes on the computer screen to select what was just described. One of the shapes had been mentioned before the test phase; the other shape had not been referred to before. The participants were faster in selecting the new referent when the descriptions were preceded by *um* than when they were preceded by background noise of similar length. Other studies (e.g., Arnold, Fagnano, and Tanenhaus 2003) also found that disfluency leads the listener to expect the speaker to refer to an object which is new in the discourse.

Barr and Seyfeddinipur (2010) tested whether listeners take the speaker's perspective when hearing *um* (i.e., the perspective of the speaker trying to describe a new referent). When the same (female) speaker described images in trial and test sessions, listeners were faster to move the mouse to select a new image not previously described in the trial session when hearing *um* than when hearing the noise of a cough preceding the description. This was not observed when a new (male) speaker provided the description in the test phase. Barr and Seyfeddinipur argue that listeners in the first case work out the reasons why the speaker is delaying her speech by taking the speaker's perspective, and that fillers serve in this way as collateral signals to the listener.

In sum, these studies suggest that polysemy in fillers is a consequence of how the listener interprets the basic meanings of the fillers (e.g., in the case of *uh* and *um*, the basic meaning of *uh* being an announcement of the initiation of what is expected to be a minor delay in speaking, and *um* an announcement of a major delay in speaking, as hypothesized by Clark and Fox Tree 2002) through considering the relevance of such fillers in their contexts of use. Though it is not clear whether speakers deliberately use fillers, it is the listener who constructs the specific meaning of a filler through inference based on cooperative principles (e.g., Grice 1975) or the communicative principle of relevance (Sperber and Wilson 1995). We turn next to a review of studies on Japanese fillers associated with production problems.

### 4.3 Filled pauses as boundary markers

In psycholinguistics, hesitation phenomena, including filled pauses, were traditionally studied in order to understand speech production processes. Fillers likely occur between processing units in language production, but their occurrence may also signal to the listener where boundaries occur between units of discourse. Tanaka (1981) was an early study that investigated filled pauses in Japanese, targeting examples where *eeto*, *ano*, and *unnto* were used. He had university students narrate stories depicted in a series of six pictures and found that filled pauses were observed between phrases (*bunsetu*, the smallest coherent syntactic unit, typically consisting of a content word and a function word), especially after conjunctions, suggesting that these were used at points just prior to the delivery of substantial content.

Yamane (2002) found that most fillers occurred utterance-internally, in positions that are relevant to utterance or discourse organization (e.g., following postpositions such as the topic-marker *wa*), where she suggests they may serve as signposts of discourse units to the listener. Nakagawa and Kobayashi (1995) discuss positions where different fillers are often used, finding that *eto* is often used sentence-initially but *ano* and *ma* often occur utterance-internally.

Swerts (1998) examined filled pauses in Dutch monologues and found that speakers tend to use the filler *uh* in phrases following major boundaries (i.e., paragraph transitions), especially phrase-initially, and based on this argues that filled pauses are markers of discourse structure. Following Swerts, Watanabe (2002) hypothesized that filled pauses in Japanese also appear at deeper discourse junctures (defined by intonational phrases agreed upon by three coders) and that fillers occur phrase-initially. She also hypothesized that *eto* and *e* appear more frequently at discourse boundaries than *ano* and *sono*. By examining spontaneous monologues, she found that phrase-initial *e* and *eto* do indeed tend to occur at deeper discourse boundaries. These findings suggest that fillers may help listeners process speaker monologues if they are aware where fillers tend to occur and know how to interpret the fillers.

Based on previous studies (e.g., Clark and Wasow 1998) showing that speakers tend to be disfluent when producing longer and complex phrases, Watanabe et al. (Watanabe, Hirose, Den and Minematsu 2006, 2008) hypothesized that filled pauses lead the listener to predict that the speaker is about to refer to an entity expressed by a relatively long or complex phrase (“the complexity hypothesis”). They conducted experiments where participants were instructed to select by clicking a button either a simple or a complex shape shown on the computer screen based on a description they heard. The test description was preceded either by a filled pause (with *eto* [ɛ:to]), a silent pause, or no pause. They found that the participants were faster in selecting the more complex shape when the description was preceded by a filled or silent pause of the same duration than by no pause. There was no significant difference between the filled pause and silent pause conditions; hence, the results were inconclusive about the effect of fillers.

As we saw in section 4.2, on the one hand the use of English fillers, compared to pauses of the same length with a noise, was found to lead the listener to expect a description by the speaker of something new. On the other hand, in the studies by Watanabe et al. (2006, 2008), the use of either a Japanese filler or a silent pause of the same length led the listener to expect something more complex to follow. Describing a new referent and describing a complex referent both require the speaker’s cognitive effort, but the presence of the filler has been found to make a difference only in the former case (in English), but not in the latter (in Japanese). More studies on listener expectations are needed to solve this puzzle.

#### 4.4 Cognitive functions proposed for Japanese fillers *ano(o)* and *etto*

As briefly mentioned above, Sadanobu and Takubo (1995) consider the fillers *ano(o)* and *etto* to be devices for monitoring the speaker's mental operations while speaking. Speakers, in this view, use *etto* to shut off the interface with their interlocutor in order to secure a larger capacity in their mental buffer to carry out operations on their mental database requiring effort. They use *ano(o)*, by contrast, when they are mindful of the presence of an interlocutor and require time to plan the appropriate language suitable for conveying the message they intend to deliver. That is, speakers are likely to use *etto* when deciding what to say and *ano(o)* when deciding how to put their messages into words. These devices primarily facilitate the speaker's mental operations, but they also allow the speaker to alert the listener to the mental operations underway. As a result of these monitoring functions, the listener can infer that *etto* suggests a momentary halt and *ano(o)* conveys a cautious and considerate attitude towards the listener. Hence, in the view of Sadanobu and Takubo (1995), the meanings of these fillers arise as consequences of their psychological functions, to which the listener may be sensitive.

Sadanobu and Takubo (1995) also note that the speaker may take advantage of these psychological functions to stage (*ensyutu*) the effects of psychological monitoring. For instance, the speaker can give the interlocutor the impression that s/he is earnestly engaged in the task of answering a question by using *etto* when asked a question, especially if the content of the response is potentially dispreferred. By using *ano* when giving a dispreferred response, by contrast, the speaker can convey to the interlocutor the impression of a high level of considerateness. Hence, devices used for psychological monitoring lead to pragmatic meanings by signalling the nature of the monitoring operations. The speaker can choose to employ these devices regardless of whether they are in fact engaged in the operations in question or not.

The accounts given in Takubo (1995) and Sadanobu and Takubo (1995) of the differences in basic function between *ano(o)* and *etto* are insightful, and their suggestion that other meanings of these fillers likewise arise as a consequence of their psychological functions appears reasonable. However, these studies do not provide empirical evidence for the claims made apart from examples generated by the authors. We turn now to a review of experimental studies and studies in discourse analysis to see whether meanings such as the ones they propose for these fillers can be supported empirically.

#### 4.5 Interactional functions of the Japanese fillers *ano(o)* and *etto*

Though not exclusively focusing on *ano(o)* and *etto*, Mizukami and Yamashita (2007) examine the behavior of listeners toward the use of fillers by speakers in an inves-

tigation of the function most often attributed to fillers in the literature since Brown (1977), that of maintaining one’s turn in a conversation. If fillers like *ano* and *etto* function to alert the listener to the fact that the speaker is engaged in cognitive processes, then they should have the effect of causing listeners to wait in order to allow the speaker to maintain his/her turn. In their 2007 study, Mizukami and Yamashita analyze fillers appearing in exchanges involving cooperative tasks where speakers were instructed to describe shapes that their interlocutor had not seen. They found that in over 80 % of cases in which fillers occurred at the beginning of a sentence, and in over 90 % of cases in which fillers were used internally to a sentence, the speaker was not interrupted by the interlocutor upon uttering a filler. The likelihood of occurrence of such interruption in cases where the interlocutor took over a turn following utterance of a filler by the speaker appeared to depend on the types of fillers used. Interlocutors were less likely to interrupt when the speaker used *etto* and *ano(o)* (the fillers most commonly used at the beginning of an utterance, especially *etto*) than when the speaker used fillers such as *unn(to)*, *nanka*, and *nante iu ka*, as seen in (3)<sup>9</sup> (Mizukami and Yamashita 2007: 597):

(3)

- 1 A: *Zya, zentai kara mi-tara donna katati?*  
       then overall ABL see-COND what.kind shape  
       ‘Then, seen overall, what kind of shape is it?’
- 2 B: (0.46) < *unnto* 1.91 (0.80) *nan-ya[roo* 0.42 >  
       FL what-COP.TENT  
       ‘Umm, what could it be?’
- 3 A: [*tii toka*  
       T like  
       ‘Something like a T?’
- 4 B: A, *tii zya-na-i*  
       ah, T COP-NEG-NPST  
       ‘Ah, it’s not (shaped like) a T.’

Mizukami and Yamashita argue that the function of fillers may be better characterized as signaling the speaker’s willingness to continue rather than his/her intention to retain the right to continue, similarly to Maynard’s (1989) characterization of fillers discussed earlier. The use of *unnto* in (3.2) combined with a pause signals that the

<sup>9</sup> Numbers in parentheses in this example indicate duration of pauses in seconds, and “[” indicates the starting point of an overlap. The fillers targeted for study are indicated by < >, and the numbers that follow a filler, including an elongated vowel, indicate the length of the filler in seconds.



speaker is in trouble or requires substantial time or effort to tackle the task at hand. This may invite the interlocutor's help, as in (3.3).

Mizukami and Yamashita's (2007) study provides evidence that interlocutors recognize the speaker's willingness to continue speaking when fillers such as *ano(o)* and *etto* are used, more so than when fillers such as *unnto* and *nanka* are used. Production-based fillers were thus shown to serve an interactional purpose, that of alerting the addressee that the speaker intends to continue. It is important to note that different (types) of fillers had differing effects in this regard. More interactional functions of *ano(o)* have been identified in discourse analysis studies, which we turn to next.

#### 4.6 Interactional functions of *ano(o)*, *so(no)*, *ko(no)*

Cook (1993) is in agreement with Maynard (1989) that fillers have social functions, but contends that Maynard's comments on fillers are too generic and impressionistic. Adopting the assumption that each filler has particular social functions, she investigates the function of the filler *ano(o)* in a family conversation and a Diet (congress) interpellation, with particular attention to how it indexes politeness. Considering it as an extension of the demonstrative *ano* 'that' to the domain of affect, she proposes that just as the demonstrative *ano(o)* is used to point to an object located at the same distance from both the listener and the speaker, the filler *ano(o)* aligns the speaker and listener to a common perspective with respect to a subsequent utterance, thus "creat[ing an] interpersonal tuning between interlocutors" (Cook 1993: 23).

As a result, *ano(o)* can solicit the listener's cooperation, highlight information, and function as a positive politeness marker. It is used as a tuning device at the beginning of a new turn to highlight something before making a point and to introduce a new topic, all of which require the speaker to get the attention of the addressee. Such functions can be explained in terms of the basic function of *ano(o)* to align the speaker and listener to a common perspective. It also often occurs in disagreements as a "positive politeness" strategy to mitigate a face-threatening act (Brown and Levinson 1987), aligning the speaker and addressee in such cases by emphasizing common ground, as seen in (4) (Cook 1993: 29–30, glosses and style of romanization due to the current author). In this example from a Diet interpellation, Mr. Konishi opposes the government policy on illegal workers.

(4)

Mr. Nomoto, Chief of the Bureau of Immigration, Ministry of Justice:

- 1 *Kore ni taisuru tekisetu-na taioo to,*  
 this DAT concerning appropriate response and  
*huhoosyuuroo no torisimari to kooiu koto ga*  
 illegal.labor GEN control and this.kind thing NOM  
*daizi dar-oo to omot-tei-mas-u.*  
 important COP-TENT QUOT think-PROG-POL-NPST  
 ‘I think it’s important to deal with this problem appropriately and to control  
 illegal labor.’  
 (The rest of Nomoto’s speech is omitted [by the original author] here.)

Mr. Konishi, an opposition party member:

- 2 → *Anoo, torisimari o genzyuu ni su-ru to i-u*  
 FL control ACC strict DAT do-NPST QUOT say-NPST
- 3 → *anoo, huhoosyuuroosei ne,*  
 FL illegal.labor.student SFP  
 ‘Illegal student workers that you will tighten control over ...’  
 (1.0)  
*ee, soohu ni iw-are-ta n des-u kedomo,*  
 FL that.way DAT say-HON-PST NMLZ COP.POL-NPST but  
*genzitu ni maa,*  
 reality DAT FL
- 4 → *ano deki-na-i n zya-na-i des-u ka.*  
 FL can-NEG-NPST NMLZ COP-NEG-NPST COP.POL-NPST Q  
 ‘uh, you said so, but in reality, uh, isn’t that impossible to control?’

The speaker Mr. Konishi uses *ano* three times in lines (4.2–4). He first establishes his topic in (4.2) and (4.3) and then presents his opposition in (4.4). Cook accounts for the co-occurrence of the sentence final particle *ne*, such as in (4.3), by its similar function of inviting the addressee’s involvement, but she argues that because *ano(o)* often occurs in sentence-initial position, it is an effective device to tune in with an addressee who may not share the same assumptions.

Interpersonal as well as textual functions of *an(o)* have also been identified by other researchers (Philips 1998; Miyanaga 2009; Miyanaga and Ohama 2011). Many of the functions proposed can be accounted for either by extension of the indexical meaning proposed by Cook (1993), as in the case of “presenting a new conversation move” (Philips 1998), or as a consequence of the cognitive function proposed by Sadanobu and Takubo (1995), as in the case of “prefacing repair” (Philips 1998; Miyanaga 2009).

Cook's (1993) proposal for deriving the indexical meaning of the filler *ano(o)* from the demonstrative *ano* explains both the origin of the form and most of its observed functions. The question then arises as to whether the meanings of the other demonstrative-type fillers *sono(o)* and *kono(o)* can similarly be explained in terms of the meanings of their demonstrative counterparts *kono* 'this' and *sono* 'that near you'.

Koide (2006) examines whether the functions of the fillers *kono(o)* and *sono(o)* found in a corpus of interviews exhibit any links to the demonstratives *kono* and *sono*. He suggests that *kono(o)* is used when the speaker recalls the content s/he already has in mind but has yet to formulate an expression to describe it, and that *sono(o)* is used when the speaker is about to talk about what concerns the listener, rather than him/herself or a third party. He argues that both fillers serve as pointers toward where to look to or pay attention to. Examples (5) and (6) (Koide 2006: 17–18) illustrate the use of *kono* and *sono*, respectively. The beginning and ending parts of each exchange are omitted here.

(5)

- 1 A *Sono zyarukyappu tte i-u no anoo*  
 FL Jarukyappu QUOT say-NPST NMLZ FL  
*nante i-u n des-u ka ne*  
 what.QUOT say-NPST NMLZ COP.POL-NPST Q SFP  
 'Well, what's called Jarukyappu [name of a program], well, how shall I put it?'  
 → *Kono, amerika ni it-te, borantia tosite, nihongo*  
 FL America GOAL go-GER volunteer as Japanese  
*o osie-tari toka*  
 ACC teach-ALT such.as  
 '[It's a program for like] going to America and teaching Japanese as a volunteer ...'
- 3 B *huun.* 'umm'
- 4 A *maa nihon no bunka o syookai-su-ru tte*  
 FL Japan GEN culture ACC introduce-do-NPST QUOT  
*i-u,*  
 say-NPST  
 '... or, well, introducing Japanese culture ...'
- 5 *maa itinenkan no puroguramu na n des-u*  
 FL one.year GEN program COP NMLZ COP.POL-NPST  
*kedo,*  
 but  
 'Well, it's a one year program where you [do things like that], but ...'

(6)

- 1 A → *Anoo siturei des-u kedo gosyuzin wa dono*  
 FL impolite COP.POL-NPST but husband TOP which  
*yoona sono,*  
 kind.of FL  
 ‘This may be impolite, but, your husband, what kind of ...’
- 2 *tatoeba, aru, tenkeitekina itiniti desu to*  
 for.example a.certain typical one.day COP.POL-NPST COND  
 ‘..., for example, if it’s a typical day ...’
- 3 B *ee* ‘uh-huh’
- 4 A *nanzi goro otaku o ode-ni-nat-te*  
 what.time about home ACC HON.leave.INF-DAT-become-GER  
*nanzi goro okaer-i-ni-nar-e-ru n*  
 what.time about HON.return-INF-DAT-become-POT-NPST NMLZ  
*des-yo?*  
 COP.POL-TENT  
 ‘... about what time does he leave home and about what time can he  
 return home?’

The speaker in (5) is describing a program s/he participated in and in (5.2) uses *kono* when trying to recall his/her experience in describing the program. In contrast, the speaker in (6.1) is trying to ask the listener a rather personal question and uses *sono* when hesitating.

The function of *sono(o)* proposed by Daikuhara (2008) differs from that of Koide in hypothesizing that *sono* points to content obtained indirectly in the current or preceding discourse or what can be inferred from it. He compares the fillers *ano(o)* and *sono(o)* in terms of Kinsui and Takubo’s (1992) claim that *ano(o)* and *sono(o)* are instructions to different cognitive domains (i. e., *ano* operates on the domain of direct experience and *sono* on that of indirect experience). He tests his hypothesis through an examination of data from the CJS corpus (lectures and interviews with lecturers) and from questionnaires, finding that the filler *sono(o)* was rarely used in the lectures but was used relatively frequently in interviews about the lectures, where content from a preceding discourse forms the topic. He also created a questionnaire with generated discourses in a context where the use of *ano* was hypothesized to be appropriate and a context where only *sono* (not *ano*) was hypothesized to be appropriate, respectively. The latter context was one that involved pointing to content newly obtained indirectly in the preceding discourse, specifically one where a teacher, having heard a student’s presentation, tries to recall a term referring to an idea discussed in the student’s presentation. While the filler *sono* was regarded appropriate only in the latter context, most respondents rated *ano* as appropriate regardless of the context, showing that the demonstrative meaning of *ano* has bleached.

## 5 Meanings of fillers derived from modal adverbs

### 5.1 From basic meanings to polysemy: English *well*

In this section we review how polysemy in the English discourse marker *well* has been accounted for in previous studies as a guide to possible explanatory approaches to polyfunctionality. Jucker (1993), for example, argues that the best approach to this form is to assume a basic meaning from which other functions are derived.

Numerous functions have been identified for *well* (e.g., Owen 1981; Schourup 1982; Carlson 1984; Watts 1986; Schiffrin 1987): e.g., as (a) a marker of insufficiency, (b) a face-threat mitigator, (c) a frame marking device indicating a topic change or introducing a direct quote, and (d) a delaying device (Jucker 1993: 438). Adopting relevance theory, Jucker (1993), argues that the basic (or ‘core’) meaning of *well* is “a signpost signaling to the hearer that the context created by the previous utterance ... is not the most relevant one for the interpretation of the impending utterance” (440), thus requiring readjustment or negotiation of the cognitive environment.

Schourup (2001), however, argues that there are many uses of *well* that Jucker (1993) fails to account for, especially those that are not used in response to an interlocutor’s utterance. He favors Bolinger’s lexical treatment, in which *well* as a discourse marker is considered to have the same basic meaning as the adverb *well* (‘relatively good’, ‘relatively strong’) albeit with a shift from the locutionary sphere to the illocutionary sphere (Bolinger 1989: 332 cited by Schourup 2001: 1029). In this view, *well* is an epistemic marker indicating deliberation by the speaker. Schourup further develops an alternative proposal for *well* as a “mental state” interjection, a quasi-linguistic vocal gesture related to its lexical source, the adverb *well*, indicating “active inferential ‘effort’” by the speaker. What follows subsequently is heard “as emerging from the ‘mental work’ marked by *well*” (Schourup 2001: 1050). This leads to a sense that the utterance is being spoken “with consideration.”

Though fillers have versatile functions, research on their use in English has been characterized by attempts to provide a unitary, generalized meaning from which all functions can be derived. The processes by which multiple functions arise from a basic meaning are generally understood to be based on Gricean cooperative principles or principles assumed in relevance theory that are shared by the speaker and the listener and under which they operate. The pragmatic meanings discussed above for *well* suggest an active role on the part of the listener in the interpretation of utterances. The consequent meaning often arises through the listener calculating the reasons and circumstances for use of the filler by taking the speaker’s perspective. This in turn potentially leads to the intentional use of these fillers by speakers on the basis of their understanding of the effect they have on listeners, based on their own experience as listeners.

## 5.2 Meanings of Japanese fillers derived from adverbs: *ma(a)*

Just as basic meanings have been sought for discourse markers in English that account for all their functions, basic meanings have been sought for *ma(a)* in Japanese from which its other meanings can be derived. With the filler *ano(o)*, the *(o)* indicates optional lengthening of the vowel in the demonstrative *ano*, but in the case of the filler *ma(a)*, the *(a)* indicates, to the contrary, optional shortening of the vowel in the corresponding adverb *maa*. As an adverb, it can be used as in *maa ii daroo* ‘it’s all right [lit. fairly good], I suppose’ with a meaning close to ‘rather, fairly, more or less acceptable.’ Two types of basic meaning have been proposed for *ma(a)*: attitudinal and cognitive. Kawakami (1993, 1994) and Fukada-Karlin (2003) seem to regard *ma(a)* as an attitudinal marker and propose that its basic meaning is, respectively, that of ‘a (provisional) summary’ (*gaigen*) and a marker of the speaker’s belief that the upcoming utterance diverges from the joint goal of the speaker and listener in the conversation. Togashi (2002) and Kawada (2007; 2010), by contrast, link the basic function of this filler to cognitive domains.

The basic meaning of ‘(provisional) summary’ (*gaigen*) proposed for *ma(a)* in Kawakami (1993, 1994) indicates an attitude on the part of the speaker of making a provisional summary statement for the time being while acknowledging potential problems with the forthcoming statement. She divides the uses of *ma(a)* into two categories: response, or a usage in response to a question or statement by the interlocutor, and development, or a usage related to taking the speaker’s turn in developing the discourse. The latter is more relevant to our interest in *ma(a)* as a filler, but the two categories are related, both based on the same meaning of ‘(provisional) summary’ (*gaigen*). We will briefly examine here meanings of the response type first, which crucially depend on what the utterance is responding to. Example (7) (Kawakami 1993: 72) illustrates the use of *ma(a)* in response to a yes/no-type question.<sup>10</sup>

(7)

- A: *Bunraku wa yoku mi ni ik-u n*  
       *bunraku* TOP often see.INF PURP go-NPST NMLZ  
       *des-u ka.*  
       COP.POL-NPST Q  
       ‘Do you often go to see *bunraku* (a traditional Japanese art form of puppetry)?’
- B: *Maa, tokidoki ne.*  
       FL sometimes SFP  
       ‘Well, sometimes.’

<sup>10</sup> Kawakami (1993) does not identify the source of her data. Kawakami’s (1994) data is from interviews broadcast on TV programs.

*Ma(a)* in this example expresses a half-hearted affirmative response. When responding to an invitation, *ma(a)* initiates an indirect refusal, the meanings in both cases appearing to be closely related to the use of this form as an adverb.

*Ma(a)* of the development type is frequently observed within a turn rather than at a juncture between turns. Though the meanings here are less substantive than the response type *ma(a)*, they can be regarded as being derived from the same basic meaning. Example (8) (Kawakami 1994: 70) includes five instances of *ma(a)* of the development type. Kawakami argues that this use facilitates both development of the discourse and the listener's comprehension of it. This example was uttered in response to a question inquiring what the strongest impressions were that the speaker (who is a scientist and astronaut) received while in space.

(8)

- 1    →   *Soo desu                    nee. ma, hontoo-ni   insyoo   ni*  
          so   COP.POL-NPST   SFP   FL   truly           impression   LOC  
          *nokot-tei-ru                    tte       iu-to*  
          remain-RES-NPST   QUOT   say-COND  
          'Let's see, well, if you ask me what really left an impression on me,  
          then ...'
- 2           *yahari                    mizumore na   n       des-u                    kedomo ne.*  
          as.expected   water.leak   COP   NMLZ   COP.POL-NPST   but       SFP  
          '... it was water leaking, you see, but ...'
- 3           *Zibun no   zikken                    no   toki   ni   aaiu                    yoki*  
          self   GEN   experiment   GEN   time   TMP   that.kind   expect  
          *si-na-i,*  
          do-NEG-NPST  
          '... (that was because an incident) like that which I didn't expect when  
          I was doing my own experiments ...'
- 4           *ano   husoku                    no   zitai                    ga   syoozi-masi-ta node,*  
          FL   unexpected   GEN   situation   NOM   arise-POL-PST   because  
          '... an unforeseen incident like that occurred.'
- 5    →   *maa, sore o   nozoi-te,                    kozinteki-na mono o*  
          FL   that   ACC   leave.out-GER   individual   thing   ACC  
          *iu-to,*  
          say-COND  
          '... well, leaving that aside, if I am to mention something personal ...'

- 6      *yahari*      *saisyo*      *ni*      *tikyuu*      *o*      *mi-ta*      *toki*  
 as.expected    first      TMP    earth    ACC    see-PST      time  
*des-yoo*              *ka*    *nee*.  
 COP.POL-TENT    Q      SFP  
 ‘... as you might expect, it’s probably the first time I saw the earth.’
- 7      →    *Ma*,    *utyuu*    *ni*,    *ma*,    *kyuuhunkan*    *de*    *wazuka*,  
 FL    space    LOC    FL      nine.minute    TMP    merely  
 ‘... well, in a mere 9 minutes in space ...’
- 8      *moo*      *muzyuuryuko*    *ni*      *natte-sima-u*              *n*  
 already    weightless      DAT    become-end.up-NPST    NMLZ  
*des-u*              *nee*.  
 COP.POL-NPST    SFP  
 ‘... you are already in a weightless state, you know.’
- 9      →    *Sono*    *ato*    *maa*,    *watasi-tati*    *wa*    *anoo*,    *zintai*  
 that    after    FL    we              TOP    FL      human.body  
*zikken*              *to*      *i-imas-u*              *ka*  
 experiment    QUOT    say-POL-NPST    Q  
 ‘(Because) after that, we (had), what you may call a human body exper-  
 iment ...’
- 10      *nizikan*    *goto*    *ni*      *nyoo*    *o*      *tor-u*              *sigoto*    *ga*  
 two.hours    every    TMP    urine    ACC    collect-NPST    job      NOM  
*ar-imas-ta*              *node*.  
 exist-POL-PST    because  
 ‘... we had the job of collecting our urine once every two hours.’

*Ma(a)* can be used sentence-initially, as in (8.1), (8.5), and (8.7), or medially, as in (8.7) (the second *ma*) and (8.9). Kawakami identifies four functions of this filler: (a) to mark the speaker’s suggestion and summary of his/her choice of a topic, (b) to mark a shift in topic, perspective, orientation, etc., (c) to sum up the development of an argument, opinion, or story prior to introducing an adjustment, and (d) to alert the listener that what follows, such as choice of terminology, is provisional. The uses of *ma(a)* in (8) appear to exemplify these functions: *maa* in (8.1) is an example of function (a), namely, the speaker presenting a topic he has provisionally selected, and (8.5) an example of function (c), where the speaker adjusts the topic and summarizes the main idea of a new topic, that viewing the earth from space for the first time was what impressed him most. The first *ma* in (8.7) signals a shift, as in function (b), to narrating background information, and the second instance of *ma* in (8.7) and *maa* in (8.9) serve as examples of function (d) in that they alert the listener that a specific duration of time (i.e., 9 minutes) and choice of a certain terminology, *zintai-zikken* ‘human experimentation,’ are being given provisionally.



Fukada-Karlin (2003), who regards conversations as “joint activities” in which interlocutors coordinate with each other to achieve certain goals, proposes that the meaning of *ma(a)* is to indicate “the speaker’s attitude that the utterance used with the marker may not satisfy the addressee’s expectations about how much it contributes to achieving the joint goal of the current discourse” (Fukada-Karlin 2003: 55). She examines naturally-occurring conversations and illustrates how different functions follow from this basic meaning when the speaker employs *ma(a)* under varying conditions in varying contexts, giving as examples four situations where the speaker believes her utterance may not contribute to the joint goal of the current conversation: (i) the speaker is not confident that her answer is as accurate, complete, relevant, or clear as the addressee might expect assuming the Cooperative Principle (Grice 1975); (ii) the speaker believes that there is a discrepancy between her beliefs/assumptions and those of the addressee; (iii) the speaker believes that her subsequent utterance will diverge from the joint goal at hand, either in the form of making a parenthetical remark or changing the goal outright, and (iv) the speaker intends to direct the addressee toward some action by suggesting a shift in orientation from that of the prior context. Different functions will result depending on the particular situation.

Situation (i) includes contexts where *ma(a)* is used as a filler when the speaker has not thoroughly thought out what to say. For example, (9) (Fukada-Karlin 2003: 58) is an utterance produced by a housewife looking for a job upon being asked what kind of job she is looking for.

(9)

- 1 → *Uun un, hai anoo, uun sono tokoro ga maa zibun*  
 FL FL yes FL FL that point NOM FL self  
*demo hakkirisi-tei-na-i n desu kedomo.*  
 even become.clear-RES-NEG-NPST NMLZ COP-POL-NPST but  
 ‘Well, uh, OK, um, uh, that point, maa I’m not even sure myself, but ...’
- 2 → *Anoo, ee ee, soko, maa, ima, tyotto, kangae-tei-ru*  
 FL FL FL that.point FL now a.bit think.PROG-NPST  
*tokoro des-u.*  
 process COP.POL-NPST  
 ‘... um, uh maa I’m still trying to decide on that.’

Fukada-Karlin explains that the speaker feels that her utterance will not satisfy the expectation from the interviewer of a clear answer based on the prior discourse. She also provides an account of other uses of *ma(a)*, suggesting that *ma(a)* signals to the addressee that what follows does not directly contribute to the joint goal of the interaction, but is being uttered to help advance the discourse.

Togashi (2002) proposes that the function of *maa* is linked to mental operations during language production and to ambiguities that can arise in the process of calcu-

lating content. Providing examples, he argues that *maa* is used either when the presupposition upon which a calculation is based or the process of calculating a result from the presupposition is not clear. As in Sadanobu and Takubo's (1995) analysis of the uses of *etto* and *ano*, he considers effects of *maa* such as softening and mitigating to be the consequence of marking cognitive processes.

For Kawada (2007, 2010), *ma(a)* is a mental state marker, like English *well* as suggested by Schourup (2001); *ma(a)* signals the speaker's state of information or knowledge, and can only be used when the speaker's knowledge, information, or judgment is not shared by the interlocutor prior to his/her utterance. Importantly, he provides empirical evidence to support his proposal. He categorizes *ma(a)* into three types, interjection (expression of surprise), hedge, and filler, treating all three types as deriving from the same basic function. He presents support for his proposal through an examination of the frequencies of *ma(a)* in the CSJ corpus, investigating utterances of the same 16 speakers participating in four different tasks: a mock lecture, an interview based on the lecture, a free conversation, and a collaborative task-based conversation. The frequency of *ma(a)* was highest when the speaker gave a mock lecture, followed in order by the interview and the free conversation; it was rarely used in the collaborative task where information was shared by both speakers. Though Kawada's proposal can largely explain the types of *ma(a)* used as a filler or hedge, it is not apparent how it could explain the interpersonal effects of *ma(a)* or its use as an interjection, which are included in discussions of *ma(a)* by other scholars (Kawakami 1993, 1994; Fukada-Karlin 2003).

It is reasonable to assume that *ma(a)* marks an attitude of the speaker, especially when its original meaning as an adverb is considered. However, as of now it is difficult to conclude definitively whether or not its attitudinal meanings are a consequence of *maa* being a cognitive marker.

### 5.3 Meanings of Japanese fillers derived from adverbs: *nanka*

The discourse marker *nanka* is generally treated as a signal marking uncertainty. Takubo and Kinsui (1997) suggest that *nanka* is used as a filler when the speaker is clear about what to say but has yet to find the words to express it. It serves several textual functions, such as initiating a new turn and signaling a shift in topic or main idea (Philips 1998; Uchida 2001). It has also been found to be highly interactional and interpersonal in character (Philips 1998; Emmett 2001).

Like *ma(a)*, *nanka* can be linked in origin to a semantically substantive lexical element, in this case the indefinite pronoun *nani-ka* or *nanka*, ‘something’ as in (10) or variations on it such as the adverbial *nanka*, ‘somehow’ in (11), the postpositional *nanka* ‘like/or something’ for exemplification in (12), which Homma states is derived from the indefinite pronoun *nanka*, and the use of *nanka* to express ‘as far as X is concerned/X in particular’ in (13). (The examples here are from Honma 2011: 90).

(10)

- 1        A: *Sorede sono toki aitu nan te it-te-ta?*  
               so        that time s/he what QUOT say-PROG-PST  
               ‘And what was he saying at that time?’
- 2    → B: *Uum **nanka** it-te-ta n da-kedo*  
               um        something say-PROG-PST NMLZ COP.NPST-but  
               *oboe-te-na-i yo*  
               remember-RES-NEG-NPST SFP  
               ‘Um, he was saying something, but I don’t remember.’

(11)

- 1    → A: *Are, kono toohu **nanka** henna azi si-na-i?*  
               oh this tofu somehow strange taste do-NEG-NPST  
               ‘What? Doesn’t this tofu somehow taste strange?’
- 2        B: *Honto da. Tabe-na-i hoo ga*  
               true COP.NPST eat-NEG-NPST alternative NOM  
               *i-i yo.*  
               be.good-NPST SFP  
               ‘Right. We’d better not eat it.’

(12)

- 1    → A: *Sono daietto tii tte saa yakkyoku ka*  
               that diet tea QUOT SFP pharmacy or  
               ***nanka** ni ik-eba ar-u no?*  
               something GOAL go-COND exist-NPST NMLZ  
               ‘As for that diet tea, can you find it if you go to a pharmacy or something?’
- 2    → B: *Un, ato netto **nanka** de mo ka-e-ru*  
               yeah in.addition internet LOC also buy-POT-NPST  
               *yo.*  
               SFP  
               ‘Yeah, and you can also buy it on the internet’

- (13) → *Suugaku **nanka** daikirai da.*  
               mathematics hate COP.NPST  
               ‘I really hate mathematics.’

Researchers differ in their views as to whether these various uses of *nanka* are related and which of them the filler *nanka* is derived from. The theory of grammaticalization appears to be a fruitful approach for investigating these links and tracing the possible development of this form as a filler.

Uchida (2001) focuses on the primary function of the filler *nanka* to preface new information, hypothesizing that its origin is in the indefinite pronoun use of this form and proposing that it serves a textual function when prefacing new concepts such as new episodes and concrete examples, illustrated in (14.1) and (14.3), and an expressive function when prefacing quotes or evaluative comments, illustrated in (14.5) (Uchida 2001: 6).

(14)

- 1 A *Nanka ne, hazimari [wa:]*  
FL SFP beginning TOP  
'Well, it all started with ...'
- 2 B [*un*]  
'yeah'
- 3 A *nanka watasi no baitosaki no:*  
FL I GEN part.time.job.place GEN  
'... uhm, where I work part-time ...'
- 4 *baitosaki no koohai no ko ga*  
part.time.job.place GEN junior GEN girl NOM  
'... a junior girl employee where I work part-time ...'
- 5 → *nanka koomuin to gookon su-ru no*  
FL public.service.employee COM party do-NPST NMLZ  
*des-u yo tte i-u kara it-ta no*  
COP.POL-NPST SFP QUOT say-NPST because go-PST NMLZ  
*ne.*  
SFP  
'...(she) said they were going to have a party to meet public service workers, and so I went.'

She proposes furthermore that the *nanka* of prefacing originates from the lexical meaning ‘something’ inherent to the indefinite pronoun via its use as a metaphor to indicate something uncertain, and that this function has been extended to textual functions under the influence of the postpositional function of *nanka* to highlight. These functions have then been further extended to include expressive, interpersonal functions.

Fukuhara (2009) reviews previous studies, examining possible relationships of grammaticalization among the various uses of *nanka* and introducing the concept of “face-work” whereby the speaker considers the face (image) of both the speaker and the listener. According to his hypothesis, the indefinite pronoun *nanka*, possessing lexical meaning, has grammaticalized to two functions, adverbial and postpositional. Both adverbial *nanka* and postpositional *nanka* have then undergone further

grammaticalization into different types of discourse markers, the adverbial *nanka* to fillers of two types, one for floor-saving and another for indicating that the speaker is searching for the appropriate words as preface to a new turn, and the postpositional *nanka* to a quote marker, used to indicate uncertainty, when quoting from the addressee's earlier statements and making evaluative comments. He has shown, by means of these speculative but plausible hypotheses, how the functions of this filler can be accounted for by the concept of "face-work," but further work remains to make clear the semantic links and processes of grammaticalization involved.

Hypothesizing, in a similar vein, that the use of *nanka* as a discourse marker has arisen via a process of grammaticalization of the adverbial *nanka*, Hayashi (2006) proposes that bleaching of the adverbial meaning 'somehow' can be used to account for the various uses of *nanka* as a discourse marker outlined in Philips (1998): as a filler (called *tunagi*, "floor-holder" by Hayashi), as a hesitation marker used to initiate a turn, preface a main point, or preface a shift in topic, and as an indicator of uncertainty. She tests her hypothesis by examining possibilities for replacing *nanka* used in these various functions with expressions synonymous in meaning with the lexical meaning of the adverb *nanka*, in particular *nantonaku* 'somehow' and *nazedaka wakarananai ga* 'not sure why,' concluding that the various uses can be correlated with the degree of bleaching that has taken place. When used to preface a main point, she argues, *nanka* retains its adverbial meaning, exhibiting the least degree of bleaching, but when it is used as a filler, it has lost that meaning, exhibiting the greatest degree of bleaching. Hayashi also demonstrates a link between the degree of bleaching and the syntactic distance between *nanka* and the modified predicate. Hayashi's study is an ingenious attempt to examine different degrees of bleaching, but since it shows that the filler *nanka* cannot be substituted with synonyms of the adverbial *nanka* and thus does not have the adverbial meaning, the link between the filler's meaning (if any) and the adverbial meaning is not clear.

Honma (2011) argues that the basic meaning of the filler *nanka* is one of uncertainty or unspecificity and that it functions as a pointer to what is about to be said (Honma 2011: 93), meanings that derive respectively from the meaning of uncertainty or unspecificity inherent to the indefinite pronoun and adverbial uses of *nanka*, and the function of postpositional *nanka*, which she maintains is that of pointing. She compares the use of *nanka* in two types of narratives in informal conversation, spontaneous narratives and pre-planned narratives on a previously assigned topic. She found that *nanka* was used much more frequently in the former, spontaneous kind of narration, where the listeners were also found to be much more engaged and interactive, as indicated by a greater degree of back-channeling and more questions asked to elicit details. She concludes that *nanka* typically occurs when the speaker is eager to speak, but has not planned how to articulate his/her message, and thus uses the filler to signal an attitude of being willing or desiring to speak.

Honma's finding supports Emmett's (2001) characterization of the function of *nanka* to promote opportunities for the speaker to speak and actively engage in

conversation (Honma 2011: 213). Based on an examination of the use of *nanka* in conversations over the phone, Emmett found that *nanka* was most frequently used among friends in situations in which they talk spontaneously about their personal experiences or opinions without much deliberation. She attributes this to a function in *nanka* of allowing the speaker not to be precise, thus freeing him/her to express his/her momentary feelings and thoughts spontaneously, and this imprecision and ambiguity in turn encourage the listener to interact with the speaker by providing supplementary information or comments. *Nanka* displays the speaker's willingness to talk by signaling that s/he has something to say, something corroborated by the findings of Mizukami and Yamashita (2007).

Such a function in *nanka* can in fact be explained in terms of a similar expressive function in non-interrogative *nan(i)* (Maynard 2000) that “serves as an ‘anti-sign’ referring to unspeakable moments of language” (Maynard 2000: 1209). Maynard argues that *nan(i)* used as a filler such as in *nani ne*, *nanka* and *nan to iu ka* ‘how should I put it’ acquires a meaning by acting as a replacement for the ‘unspeakable’ so as to avoid specificity for social, psychological, or interactional reasons. In other words, *nan(i)* is “a sign that signifies the situation in which one cannot or does not find an appropriate signifier.” As an interjection, it is a spontaneous outburst marking a particular mental attitude, uttered “to fill the need of saying something when no words can be found” (Maynard 2000: 1234). Perhaps all fillers are interjections of this kind, but Maynard's in-depth analysis of interrogatives clarifies what sets apart fillers containing *nan(i)* from other fillers. “Essentially,” Maynard states, “the non-interrogative *nan(i)* creates an interrogativity in disguise, demands attention toward a reference in disguise, and consequently facilitates the creation of a shared emotion among participants” (Maynard 2000: 1235). This signals a participatory attitude on the part of the speaker, and the listener in turn shares the emotional experience of the unspeakable. In so doing, *nan(i)* aligns the speaker and the listener to a common perspective. Maynard's (2000) study is based on conversations found in comics and novels, but it has high explanatory potential for naturally occurring conversation, and her proposals are supported by many of the findings reported above.

#### 5.4 Meanings of Japanese fillers derived from adverbs: *yappari*

There is a general consensus among linguists that *yahari* (and its variant forms *yappari* and *yappa*) is a modal adverb expressing a subjective attitude on the part of the speaker with a meaning like ‘as expected’ or ‘after all’, but just who is the one expecting is not always clear. Nishihara (1988) offers a pragmatic analysis of the adverb, adopting Grice's principles, and arguing that what is stated is to be interpreted as a logical conclusion based on certain presuppositions derived from the context, knowledge shared by the speaker and listener, or general knowledge.

Tanaka (1997) proposes a relevance theoretic account of the adverbial, arguing that it has a procedural meaning. Takeuchi (2003) examines its discourse-marking functions and proposes that its procedural meaning is to direct the hearer to activate and select a context from which to infer how what is stated leads to the conclusion by the speaker.

The above works do not, however, explain the use of *yappari* as a filler and its potential interactive effects. Maynard (1991), adopting her theory of Discourse Modality, regards *yappari*, including its use as a filler, as a Discourse Modality indicator. She regards it as a sign that typically assumes “the other” and aspires to share an “identical epistemological position with the other” (Maynard 1991: 49). It is usually used on the assumption that the speaker and the addressee share knowledge; importantly, regardless of whether the knowledge is shared or not, “the shared-knowledge-based identity enhances similarity among participants and, therefore, encourages interpersonal rapport and empathy.” Maynard (1991) argues moreover that because *yappari* projects a personal attitude regarding some fact, the use of *yappari* may signal to the listener that the speaker is engaged in some thought process, thus taking on an interactional component to its meaning. As a filler too *yappari* expresses subjectivity and intersubjectivity, signaling that participation is welcomed. Maynard’s account is intriguing but is unfortunately based entirely on data from written fictional texts, requiring further support from empirical studies based on actual spoken data.

Honma (2011), whose account of *nanka* was presented in Section 5.3, analyzes *yappari* following a similar procedure as she uses for *nanka*. She first identifies extended meanings of the adverbial use of *yappari* and links one of these meanings, ‘when realizing the value (of something) again,’ as seen in (15) (Honma 2011: 137), to the meaning of *yappari* as a filler ‘as I think it over again’ in (16).

(15)

- I: *Yappari Asada sensyu no waza tte kaku ga*  
*yappari Asada athlete GEN skill QUOT level NOM*  
*tiga-u yo ne.*  
 be.different-NPST SFP SFP  
 ‘As expected, the player Asada’s skills are incomparable, aren’t they?’
- J: *Un, kandoo-si-tyat-ta.*  
 yeah, be.impressed-do-put.away-PST  
 ‘Yeah, I was impressed.’

(16)

- K: *Sensei no tyoozyu no hiketu tte nan des-u*  
 teacher GEN longevity GEN secret QUOT what COP.POL-NPST  
*ka.*  
 Q  
 ‘What is the secret of your longevity, professor?’

- I: *Soo des-u                      nee, yappari   kisoku-tadasii   suimin   to*  
      so   COP.POL-NPST   SFP   *yappari*   regular                sleep   and  
      *syokuzi, sore   ni   tuki-ru                      to   omo-imas-u.*  
      meals   that   DAT   be.summed.up-NPST   QUOT   think-POL-NPST  
      ‘Well, the more I think about it, it all comes down to sleeping and eating  
      regularly.’

Honma considers the use of *yappari* as a filler in spoken data from conversations and interviews involving expression of opinions, the type of speech genre where speakers are expected, on the basis of prior studies, to most often use *yappari*. She separates her data into two types, according to whether the speaker has a clear opinion of his/her own to present to interested and engaged addressee(s), or is merely presenting an opinion as instructed on a specified topic. Her results show that *yappari* is used much more frequently in interactions of the former kind than the latter. She further demonstrates the high degree to which interactionally significant linguistic features such as sentence final particles *yo* and *ne* co-occur with the use of *yappari*. Her approach provides insight to the study of fillers in at least two ways. First, in identifying the type of speech genre where a given filler is typically used, it suggests that fillers have different meanings and functions that are not necessarily interchangeable. Second, by identifying linguistic features co-occurring with *yappari*, it provides a better understanding of the kind of speech register and genre in which this filler appears.

The studies reviewed thus far treat the varying forms of *yappari* as occurring in free variation. Shinzato and Masuda (2009), however, present a differing view on this. Adopting a usage-based approach, one that assumes that grammar is shaped by how language is used, they examined the distribution of *yahari*, *yappari*, and *yappa* as used in corpora of spoken Japanese and found that *yahari* is primarily used as an adverb in public contexts such as business meetings, while *yappari* and *yappa* are typically used in private contexts to assert emphatically the opinions of the speaker. They also found that *yappari* and *yappa* co-occur more often than *yahari* with interactional linguistic features such as interactional sentence-final particles, and most often in utterance-initial positions, where discourse markers are typically used (Schiffrin 1987; Traugott 1995). *Yappari* and *yappa* were also found to appear occasionally in predicate final position, unlike *yahari*. Only *yappari* and *yappa* were used as fillers, with original meanings bleached. Interestingly, they also found that *yahari-yappari-yappa* form a cline related to emotivity, as seen in the increasingly heightened level of emotion in (17), taken from a TV debate show (Shinzato and Masuda 2009: 826).



(17)

1. ... *demo*, **yahari**, *kekkyoku*, **yappari**, *kikai*      *no*  
 but      *yahari*      in.the.end      *yappari*      opportunity      GEN  
*kintoo*      *dake*      *wa*, **yappa**,  
 equality at.least      CNT      *yappa*
2.      *doositemo*      *mamon-nakyaikenai*.  
 no.matter.what      maintain-must  
 ‘But *yahari*, in the final analysis, *yappari*, at the very minimum equal  
 opportunity, *yappa* must be maintained.’

While numerous insights have been proposed in past research into the grammaticalization of discourse markers and fillers, these have not always been empirically supported. Shinzato and Masuda’s (2009) work is an important contribution to filling this gap, showing as it does the very processes of grammaticalization at work and suggesting a promising line of approach to account for variations in form in other fillers as well (e.g., *ano* vs. *anoo*, *ma* vs. *maa*).

## 6 Conclusion

Several important conclusions about the meanings of fillers may be drawn from the in-depth consideration of past research presented in this chapter. First, each filler has its own meaning distinct from other fillers, certain features of which may be understood as unintentional consequences of its use by speakers rather than features inherent to its lexical meaning. Second, past research has largely been guided by an endeavor to provide unified accounts of the polysemy of discourse markers, their use as fillers constituting one of several “functions” of such markers. In the case of fillers derived from adverbs, while the original meaning may have undergone substantial bleaching, certain aspects of the original meaning can nevertheless be seen to contribute to the subjective and intersubjective meanings they exhibit as fillers. Third, and perhaps most importantly, research has largely shown that the pragmatic meanings of fillers arise by means of inferences made by listeners based on cooperative principles assumed to hold among the interlocutors, as formulated in Grice’s Maxims and relevance theory, and, more generally, by means of listeners taking the speaker’s perspective, regardless of whether the filler originates from a quasi-linguistic vocal gesture or a conventional lexical form.

Fillers aid speakers in managing their speech and at the same time enable listeners to infer attitudes, difficulties in production, and psychological monitoring operations on the part of the speaker, which in turn lead to the generation of pragmatic meanings. Finally, fillers aid speakers not only in talking, but in suggesting their willingness to talk and hence to cooperate in the goals of the conversation.

Hayakawa (1990 [1939]) observes, based on human social practices, that “the prevention of silence is itself an important function of speech” (Hayakawa 1990: 57), playing an important role in the establishment of communal relationships. Vocalization of any kind is without doubt a stronger signal of the speaker’s willingness to cooperate in social interaction than is silence. For that matter, not just vocalization, but also gestures, posture, head movement, and/or facial expression fill an important role in enabling such interaction in the absence of meaningful speech. Fillers, particularly those that help align the speaker and the listener to a common perspective in a given culture, occupy a uniquely valuable position among such devices in establishing social relationships. Unfortunately, there appears to be very little research at this point in time that examines the use of specific Japanese fillers in patterns of co-occurrence with interactional meaning signalled through gestures, facial expressions, and head movement, suggesting a potentially fruitful and informative avenue of future research into the nature of human interaction.

## Acknowledgments

I would like to express sincere gratitude to the editors of this volume, Wesley Jacobsen and Yukinori Takubo, for their encouragement and support in the process of my writing this chapter. I am also extremely grateful for the constructive and valuable comments I received from an anonymous reviewer.

## Additional abbreviations

ALT – alternative, CNT – contrastive, FL – filler, GOAL – goal, MIM – mimetic adverb, NPST – nonpast, TENT – tentative, TMP – temporal

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